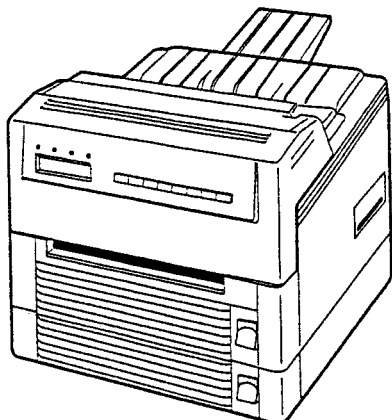# SHARP SERVICE MANUAL

CODE: 00ZJX9660SM/E

LASER PRINTER

JX-9660
MODEL JX-9660PS

CONTENTS

This Service Manual describes only the differences from the JX-9460/9460PS and the JX-9660/9660PS.
For the other items, refer to the JX-9460/9460PS Service Manual and the JX-9600 Service Manual.
The compiled Parts Guide of all the models is attached to this Service Manual for your convenience.

CAUTION

This laser printer is a class 1 laser product that complies with 21CFR 1040.10 and 1040.11 of the CDRH standard and IEC825. This means that this machine does not produce a hazadous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazadous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eye's retina, there is danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

1) When a problem in the laser optical unit has occured, the whole optical unit must be exchanged as a unit, not an individual part.

2) Do not look into the machine with the main switch turned on after removing the developer unit, toner cartridge, and drum cartridge.

3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.

4) The upper frame and the middle frame contains the safety interlock switch.

   Do not defeat the safety interlock by inserting wedges or other items into the switch slot.

CLASS 1 LASER PRODUCT

LASER KLASSE 1

LASER WAVE – LENGTH : 780 ± 10nm
Pulse times : 45 ± 2μs/7mm
Out put power : 0.22mW ± 0.05

CAUTION
INVISIBLE LASER RADIATION,
WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

VORSICHT
UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GEÖFFNET UND
SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT.
NICHT DEM STRAHL AUSSETZEN.

VARO !
AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ
KATSO SÄTEESEEN.

ADVARSEL
USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR
SIKKERHEDSBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLING.

VARNING !
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
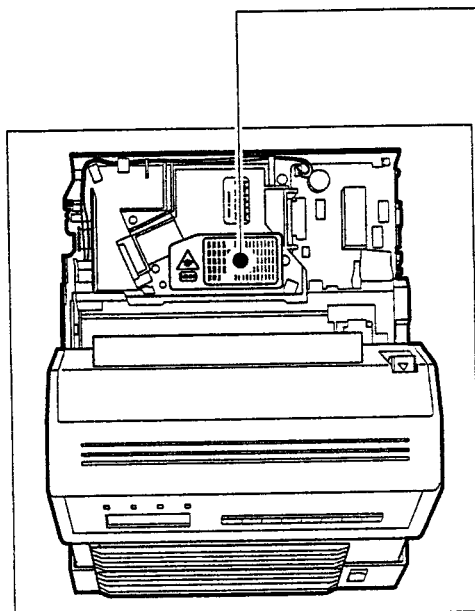BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR
FARLIG.

SHARP CORPORATION

At the production line, the output power of the scanner unit is adjusted to 0.57 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC). Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

Caution
This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.
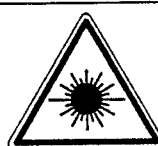
CAUTION	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL.	USYNLIG LASERSTRÅLNING VED ÅBNING. NÅR SIKKERHEDSBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLNING.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN-STRÅLEN AR FARLIG.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEIL YLLE ÄLÄ KATSO SÄTEESEEN.

Laserstrahl

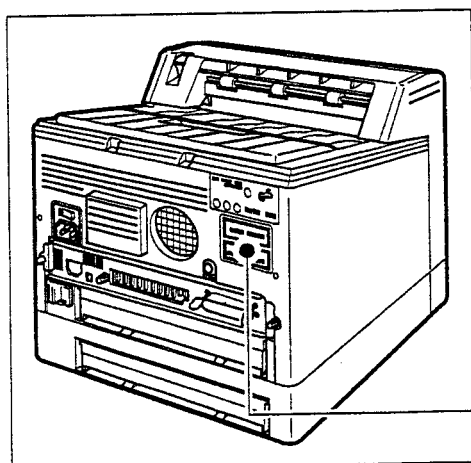Laserstrahl

CAUTION	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL.	USYNLIG LASERSTRÅLNING VED ÅBNING. NÅR SIKKERHEDSBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLNING.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN-STRÅLEN AR FARLIG.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEIL YLLE ÄLÄ KATSO SÄTEESEEN.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

LASER KLASSE 1

CLASS 1 LASER PRODUCT

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

The foregoing is applicable only to the 220V model, 230V model and 240V model.

There is an erroneous description of the laser power on the cover of the JX-9460/9460PS Service Manual. Please correct it as follows:

Erroneous
0.35mW ±0.05

Correct
0.22mW ±0.05

Comparison Table

	JX-9660PS	JX-9660	JX9460PS	JX-9460	JX-9600
Speed	8 ppm	8 ppm	6 ppm	6 ppm	8 ppm
Resolution (PCL/PS)	300/600 dpi	300/(600) dpi	300/600 dpi	300/(600) dpi	300/300
HRT	yes	yes	yes	yes	yes
Engine Resolution	600 dpi	600 dpi	600 dpi	600 dpi	600 dpi
Paper Input	500 sht	500 sht	250 sht	250 sht	500 sht
Paper Output	250 sht	250 sht	250 sht	250 sht	250 sht
Foot Print (ft*2)	1.3	1.3	1.3	1.3	1.3
Weight	32 lbs (14.5 kg)	32 lbs (14.5 kg)	27 lbs (12.1 kg)	27 lbs (12.1 kg)	32 lbs (14.5 kg)
Processor	AM29005 (RISC)	AM29005 (RISC)	AM29005 (RISC)	AM29005 (RISC)	AM29005 (RISC)
CPU clock frequency	14MHz	14MHz	14MHz	14MHz	9.83MHz
RAM speed	70ns	70ns	70ns	70ns	80ns
Interface LSI original oscillation frequency	28MHz	28MHz	28MHz	28MHz	19.66MHz
ROM access speed	120ns	120ns	120ns	120ns	150ns
Std Memory	2.0MB w/S.B.✳	1.0MB	2.0MB w/S.B.✳	1.0MB	1.0MB
Max. Memory	9.0MB	9.0MB	9.0MB	9.0MB	9.0MB
Font Scalable (PCL/PS)	(13/35)	(13/)	(13/35)	(13/)	(13/)
Font True Type (PCL/PS)	N/A	N/A	N/A	N/A	N/A
Font Screen (PCL/PS)	(13/)	(13/)	(13/)	(13/)	(13/)
Font Bit map	14	14	14	14	14
Font Slot	2	2	1	1	2
I/F Std (Parallel)	yes	yes	yes	yes	yes
I/F Std (Serial)	yes	optional	optional	optional	optional
I/F Std (Apple talk)	yes	optional	optional	optional	optional
I/F opt.	N/A	Apple talk/Serial	Apple talk/Serial	Apple talk/Serial	Apple talk/Serial
I/F Auto switch	yes	yes	yes	yes	yes
PDL	PCL5	PCL5	PCL5	PCL5	PCL5
Other Emulation	3	3	3	3	3
PS upgrade	standard L1	yes	standard L1	yes	yes
Toner Life	15k	15k	15k	15k	15k
Developper Life	—	—	—	—	—
Drum Life	30k	30k	30k	30k	30k
Initial supply Life	15k/30k	15k/30k	5k/5k	5k/5k	15k/30k

✳ with soft band technology

Table of options PS/AP/RS/MEMORY

	PS		I/F			MEMORY					
	JX-96PS	JX-96PS1	JX-96AP	JX-96AP1	JX-96RS	JX-96MB	JX-96MD	JX-96MH	JX-96MB1	JX-96MD1	JX-96MH1
JX-9400	N/A	N/A	N/A	N/A	A	A	A	A	A	A	A
JX-9460	N/A	A	N/A	A	A	N/A	N/A	N/A	A	A	A
JX-9600	A	N/A	A	A	A	A	A	A	A	A	A
JX-9600	N/A	A	N/A	A	A	N/A	N/A	N/A	A	A	A
JX-9700E	A	N/A	A	A	A	A	A	A	A	A	A
JX-9460PS	N/A	Std	N/A	A	A	N/A	N/A	N/A	A	A	A
JX-9600PS	Std	N/A	Std	—	—	A	A	A	A	A	A
JX-9600PS	N/A	Std	—	Std	—	N/A	N/A	N/A	A	A	A

A →Available
Std →Standard feature
N/A→Not Available

SHARP PARTS GUIDE

MODEL JX-9660 JX-9660PS

Because parts marked with "⚠" is indispensable for the machine safety maintenance and operation, it must be replaced with the parts specific to the product specification.

DEFINITION

The definition of each Rank is as follows and also noted in the list

A : Parts necessary to be stocked as High usage parts.

B : Parts necessary to be stocked as Standard usage parts.

C : Low usage parts.

D : Parts necessary for refurbish.

E : Unit parts recommended to be stocked for efficient after sales service.

Please note that the lead time for the said parts may be longer than normal parts.

S : Consumable parts.

Please note that the following parts used in Copier under the same description are classified into A or B Rank depending upon the place used.

Example   : Gear made of Metal, Sprocket, Bearing, Belt made of Rubber, Spring clutch mechanism.

A Rank   : The parts which may be with the revolution or loading.

B Rank   : Parts similar to A Rank parts, but are not included in Rank A.

1 Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	CCAB-0031GC09	AX	N	D	Front cabinet (JX-9660)
1	CCAB-0031GC08	AX	N	D	Front cabinet (JX-9660PS)
2	PCOVP0028GCZZ	AG		D	LCD cover
3	HPNLC0014GCZZ	AE		D	Key panel
4	CPWBF0045GC51	BG		E	OPU PWB
6	XEPSE40P10000	AA		C	Screw (4×10)
7	CCAB-0030GC03	BC		D	Upper cabinet(This includes No.8,23)
8	JBTN-0002GCZ1	AC		C	Eject button
9	XCPSD40P10000	AA		C	Screw (4×10)
10	MSPRT0077GCZZ	AB		C	Cassette push out spring
11	MLEVP0029GCZZ	AD		C	Cassette push out lever
12	PCOVP0025GCZZ	AD		C	EXM cover
13	XEBSD40P12000	AA		C	Screw (4×12)
14	GLEGG0002GCZZ	AB		C	Rubber foot
15	JBTN-0002GCZ1	AC		C	Eject button
16	PCASZ0011GCZ1	BA		D	Bottom case
19	TLABH2597FCZZ	AC		C	Caution label (SEEG only)
21	TLABT0001QCZZ	AA		C	Hyatte label (USA only)
23	PMLT-0030GCZZ	AB		C	Upper cabinet cushion
25	XEPSD30P08X00	AA		C	Screw (3×8X)
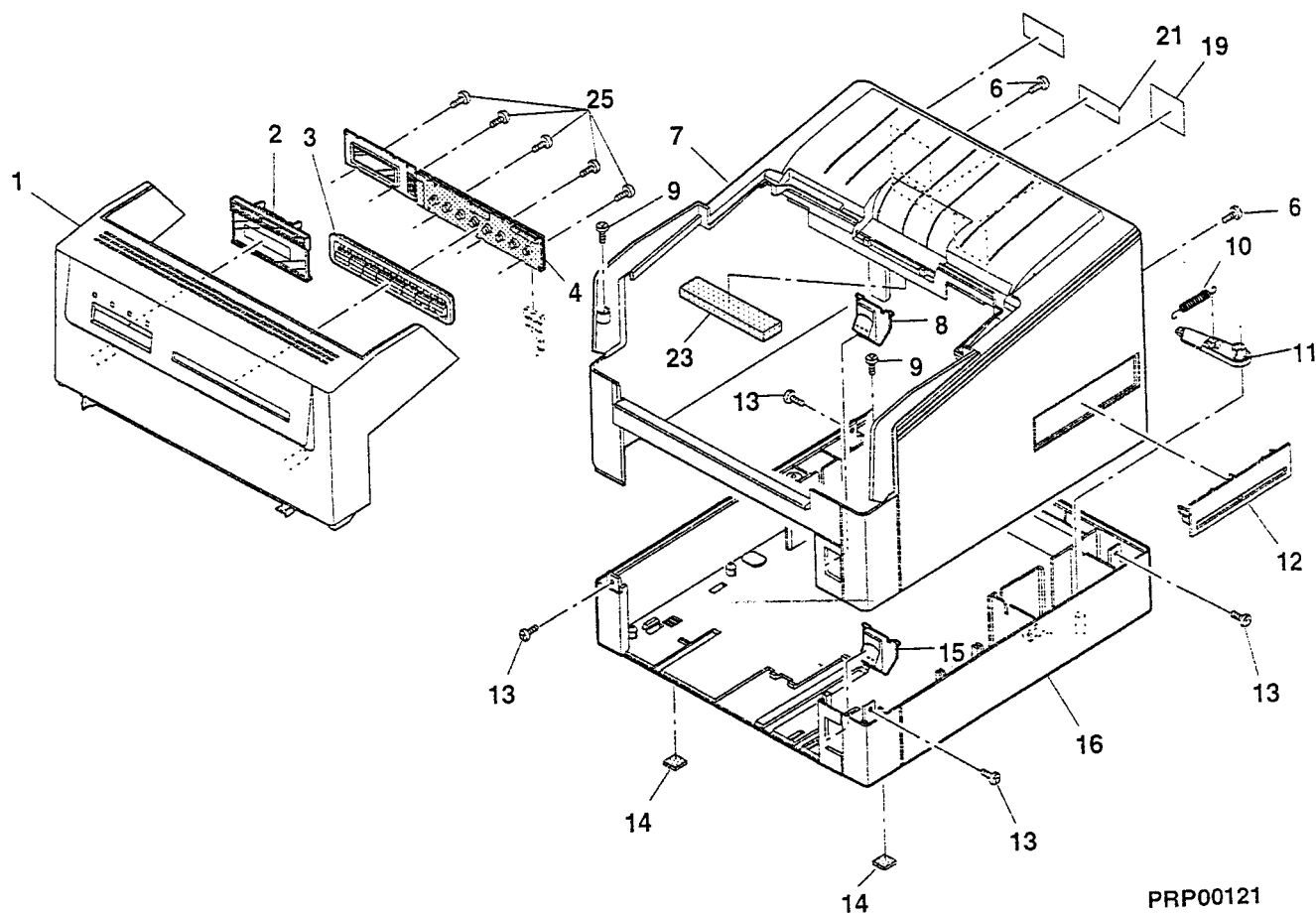
PRP00121

2 Frame 1

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	CFRM-0021GC31	AZ		E	Guide frame unit(This includes №2,3)
2	MLEVP0029GCZZ	AD		C	Cassette push out lever
3	MSPRT0077GCZZ	AB		C	Cassette push out spring
4	XEBSD30P08000	AA		C	Screw (3×8)
5	LPLTM0104GCZZ	AR		C	Bottom plate
6	CPWBF0049GC59	BQ		E	PCU PWB
7	XEBSD40P12000	AA		C	Screw (4×12)
8	DUNT-0056GC12	CA		E	Optical unit
9	LPLTM0127GCZZ	AB		C	IN detector shield plate
10	CPWBF0054GC51	AK		E	Drum connect PWB
11	XHBSD30P05000	AA		C	Screw (3×5)
12	LPLTM0112GCZZ	AD		C	Earth plate for sensor
13	CPWBF0048GC31	AK		E	Toner sensor PWB
14	CGiDM0033GC02	AT	N	C	PS guide ass'y
15	MSPRT0072GCZZ	AA		C	PS guide spring
16	PGiDH0032GCZZ	AH		C	PF guide
17	XEBSD30P10000	AA		C	Screw (3×10)
18	NBRGC0030GCZZ	AB		C	PS roller bearing
19	XRESP50-06000	AA		C	E-Type ring (5mm)
20	NROLP0046GCZ1	AP		C	PS roller
21	MSPRC0074GCZZ	AA		C	Spring for DV
22	XRESP40-06000	AA		C	E type ring (4mm)
23	NBRGC0343FCZZ	AB		C	FD drive bearing (φ5)
24	RDTCF0013GCZZ	AM		B	P-IN sensor
25	NROLR0031GCZZ	AR		C	Pick up roller
26	NROLR0032GCZ1	AP		C	PF roller
27	PSHEP0074GCZZ	AB		C	Harness fixing sheet
28	XEBSD30P08000	AA		C	Screw (3×8)
29	NBRGP0013GCZZ	AD		C	Bearing
30	NGERH0036GCZZ	AB		C	PF gear
31	NGERH0037GCZZ	AG		C	27T PU gear lower
32	MSPRC0105GCZZ	AD		C	Cluch spring
33	PPiPP0001GCZ1	AC		C	PU sleeve
34	LBOSZ1031FCZZ	AC		C	Clutch boss
35	NGERH0039GCZZ	AG		C	27T/27T gear
36	MLEVP0031GCZZ	AC		C	Eject lever
37	MSPRT0069GCZZ	AA		C	Eject spring
38	MSPRC0070GCZZ	AB		C	Earth spring
39	NGERH0040GCZZ	AC		C	31T gear
40	NGERH0038GCZZ	AC		C	39T gear
41	PCLC-0006GCZ1	AX		C	PS electromagnetic clutch
42	LHLDZ0013GCZZ	AD		C	PE lever holder
43	MLEVP0028GCZZ	AF		C	PE lever
44	PRNGP0026FCZZ	AA		C	Ring (GTW-3)
45	MSPRC0071GCZZ	AA		C	Safety switch spring
46	MLEVF0036GCZZ	AC		C	Safety switch actuator
47	MLEVP0032GCZZ	AD		C	Safety switch lever
48	QSW-M0017GCZZ	AG		B	Safety switch
49	XEBSD30P16000	AA		C	Screw (3×16)
50	CPWBF0050GC71	BB		E	MD PWB
51	PGiDM0042GCZZ	AC		C	Frame guide R
52	XEBSE30P10000	AA		C	Screw (3×10)
53	NGERH0046GCZZ	AG		C	36T gear
54	NGERH0047GCZZ	AD		C	30T gear
55	XBPSN40P06K00	AA		C	Screw (4×6K)
56	LPLTM0106GCZZ	AC		C	PSP earth plate
57	XBPSN30P06K00	AB		C	Screw (3×6K)
58	LPLTM0107GCZZ	AE		C	Frame earth plate
59	MSPRC0068GCZZ	AA		C	Size detect spring
60	MLEVP0030GCZZ	AD		C	Size detect lever
61	CPWBF0051GC51	BD		E	Cassette PWB
62	XEPSD30P08X00	AA		C	Screw (3×8X)
63	CPLTM0118GC02	AH		C	Gear fixing angle
64	PSPAZ0009GCZZ	AA		C	Drive spacer
65	LX-WZ2012SCZZ	AA		C	Washer (CO1720C)
66	NGERH0044GCZZ	AG		C	Gear
67	NGERH0045GCZZ	AD		C	54T/24T gear
68	CFRM-0022GC51	BN		E	Drive frame unit
69	XWVSD30-04065	AA		C	Washer
70	XHBSE30P08000	AA		C	Screw (3×8)
72	DHAi-0043GCZZ	AC		C	Fusing earth wire
73	LBOSZ0051GCZZ	AC		C	Brake boss
74	PSHEP0107GCZZ	AF	N	C	FFC shield sheet
75	PSHEP0081GCZZ	AE		C	ICU shield sheet B
77	PSHEP0083GCZZ	AD		C	PF sheet B
78	PSHEP0082GCZZ	AD		C	PF sheet A
79	PMLT-0028GCZZ	AA		C	Optical cushion C
80	PMLT-0029GCZZ	AA		C	Optical cushion D
82	PSHEP0078GCZZ	AA		C	Slide sheet
83	PMLT-0026GCZZ	AA		C	Optical cushion A

② Frame 1

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
84	M S P R B 0 1 0 7 G C Z Z	A B		C	MM earth spring
86	P T P E - 0 0 0 8 G C Z Z	A C		C	Bottom plate tape
87	P S H E P 0 1 0 1 G C Z Z	A C		C	Guide sheet
88	P S H E P 0 1 0 2 G C Z Z	A B		C	Harness sheet
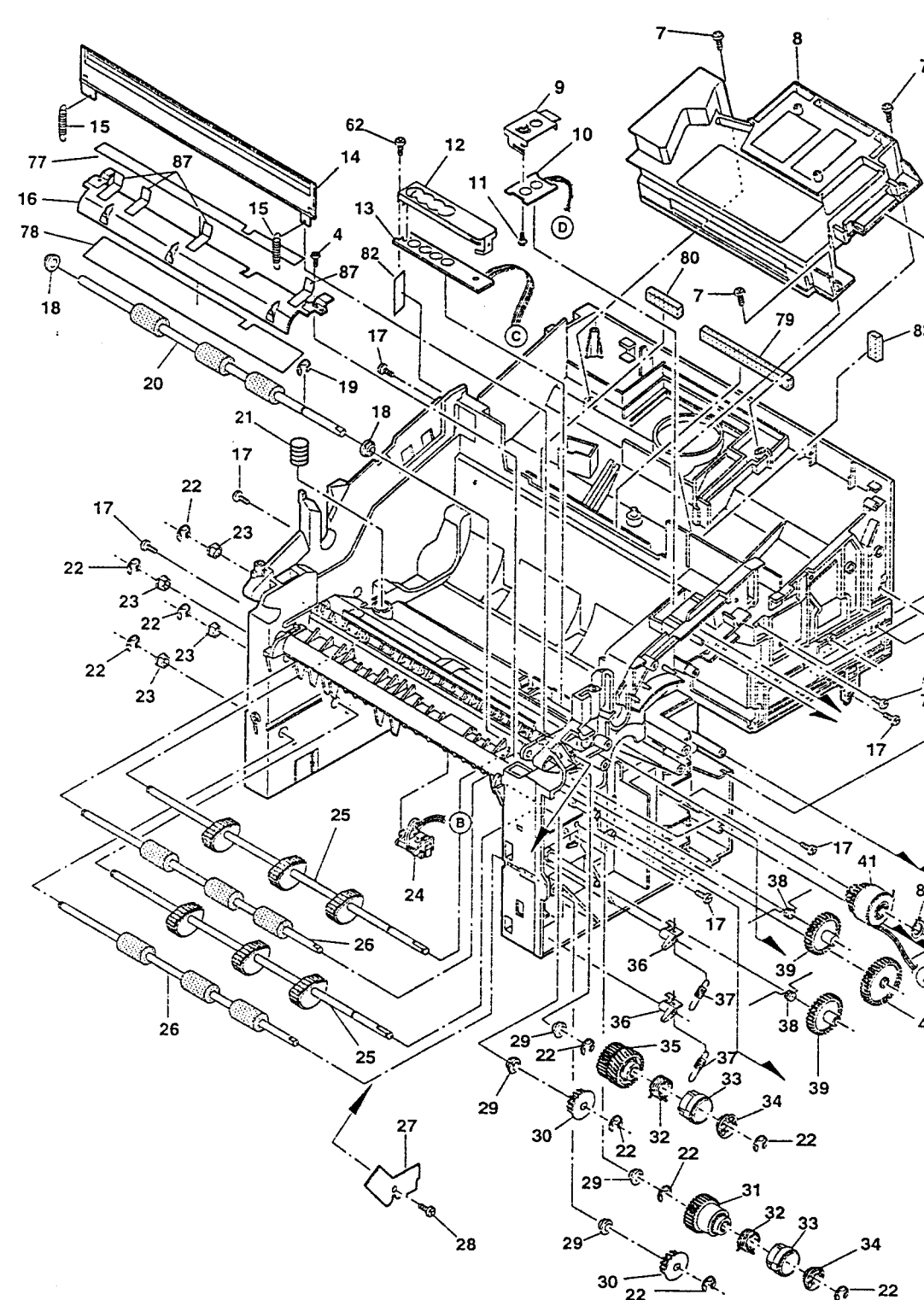
② Frame 1

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
89	P R N G P 0 0 1 9 F C Z Z	A A		C	Ring (G6)
90	L B N D J 2 0 0 3 S C Z Z	A A		C	Band,wire
91	P B R S S 0 0 0 5 G C Z Z	A D	N	C	FC electorostatic brush (200V series)
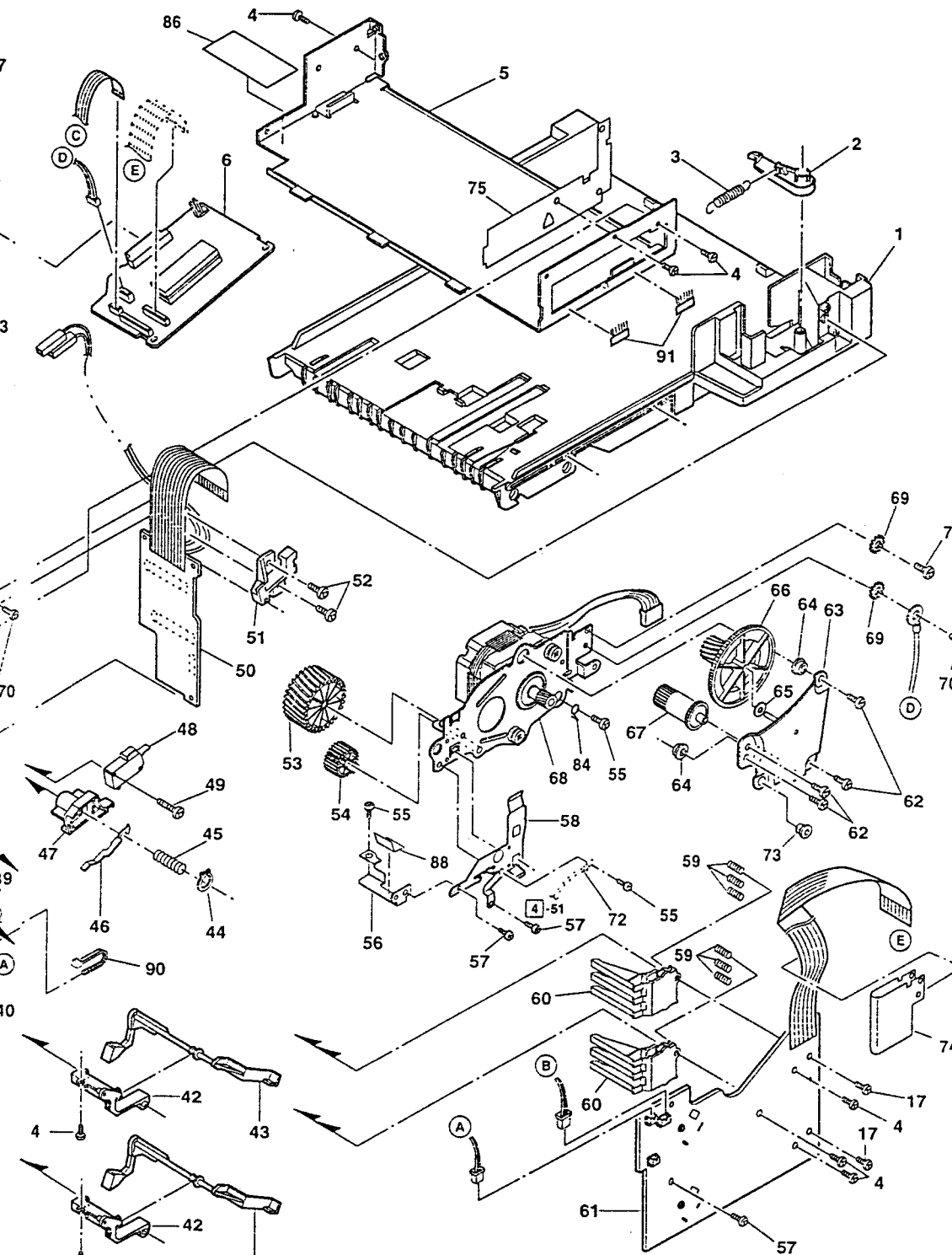
PRP00122

3 Frame 2

PRP00123
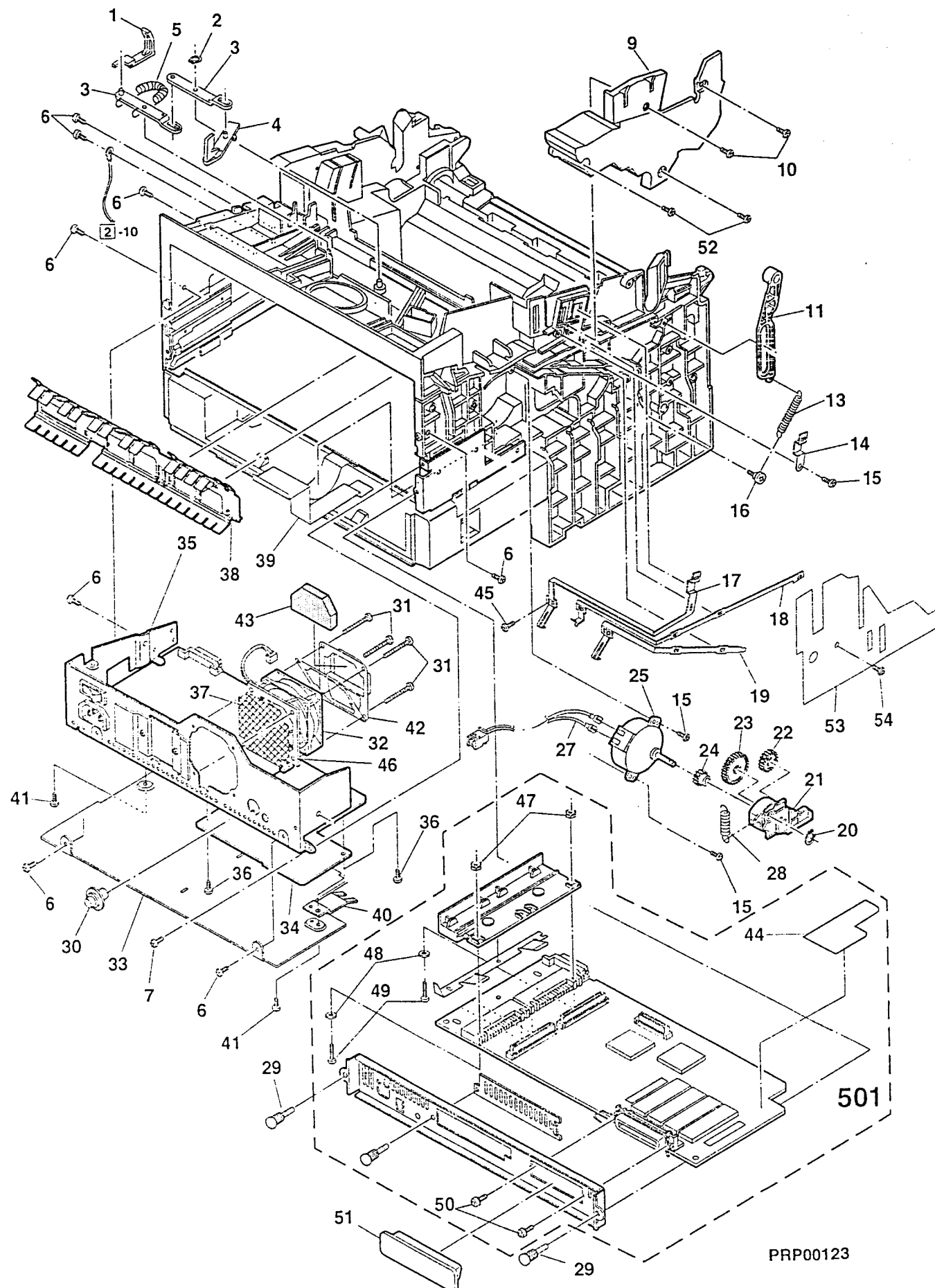
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	MLEVP0034GCZZ	AC		C	Shutter lever B
2	PRNGP0033FCZZ	AA		C	Ring (G4)
3	MLEVP0033GCZZ	AC		C	Shutter lever A (ABS)
4	PSHT−0006GCZ1	AD		C	Optical shutter
5	MSPRT0127GCZZ	AB		C	Shutter spring A
6	XHBSE30P08000	AA		C	Screw (3×8)
7	XBPSN40P06K00	AA		C	Screw (4×6K)
8	PCASZ0015GCZ3	AK		C	Duct case
9	XEBSD30P08000	AA		C	Screw (3×8)
10	LSTPP0006GCZZ	AE		C	Transport stopper
11	MSPRT0130GCZZ	AB		C	Transport stopper spring N
13	QSLP−0024GCZZ	AB		C	High voltage terminal D
14	XEBSD30P08000	AA		C	Screw (3×8)
15	LX−BZ0019GCZZ	AB	N	C	Screw
16	QSLP−0015GCZZ	AF		C	High voltage terminal C
17	QSLP−0014GCZZ	AG		C	High voltage terminal B
18	QSLP−0013GCZZ	AE		C	High voltage terminal A
19	PRNGP0025FCZZ	AA		C	G type ring (GTW−5)
20	MARMP0008GCZZ	AE		C	Toner arm
21	NGERH0043GCZZ	AC		C	26T gear
22	NGERH0042GCZZ	AC		C	40T gear
23	NGERH0041GCZZ	AB		C	15T gear
24	RMOTN0011GCZZ	AT		B	Toner motor
25	MSPRC0123GCZZ	AB		C	TM earth spring
26	DHAi−0055GCZZ	AE		C	Toner motor harness
27	MSPRT0075GCZZ	AB		C	Toner arm spring
28	LX−BZ0016GCZZ	AB		C	Screw
29	JKNBZ0003GCZZ	AD		C	VR knob
30	XBPSD30P32000	AA		C	Screw (3×32)
31	RMOTN0012GCZZ	AX		B	Fan motor
32	LPLTM0105GCZZ	AM		C	Shield plate
33	CPWBF0047GC37	BQ		E	High voltage PWB
34	CPWBF0046GC31	BR		E	Power supply PWB (110V/120V)
35	CPWBF0046GC33	BX		E	Power supply PWB (127V)
	CPWBF0046GC32	BS		E	Power supply PWB (200V series)
36	XBPSD30P06000	AA		C	Screw (3×6)
37	GNET−0001GCZZ	AK		C	Mesh
38	QEARP0011GCZZ	AK	N	C	AC earth plate N
39	PTPE−0006GCZ1	AE		C	TM shield tape
40	LPLTM0139GCZZ	AB		C	Shield plate A
41	XBPSE30P04000	AA		C	Screw (3×4)
42	PCASZ0017GCZ1	AG		C	Filter case
43	PFiLZ0006GCZZ	AG		C	Ozone filter
44	PSHEP0086GCZZ	AC		C	ICU sheet
45	XEBSD20P05000	AA		C	Screw (2×5)
46	PSHEG0093GCZZ	AD		C	Fan motor sheet
47	XNESD20−16000	AA		C	Nut (JX−9660PS)
48	PSPAZ0018GCZZ	AD		C	Spacer 10 (JX−9660PS)
49	XBPSD20P16000	AA		C	Screw (2×16) (JX−9660PS)
50	XBPSE30P06000	AA		C	Screw (3×6)
51	PCAPH1001ACZZ	AE		C	Connector protector cap (36pin)
52	XEBSE30P10000	AA		C	Screw (3×10) (200V series)
53	XEBSD30P08000	AA		C	Screw (3×8)
54	LPLTM0155GCZZ	AF	N	C	TM shield plate (200V series)
501	CPWBX0064GC57	CP	N	E	ICU PWB (JX−9660 : except SEEG,特殊国を除く)
	CPWBX0064GC55	CQ	N	E	ICU PWB (JX−9660PS : 特殊国を除く)
	CPWBX0064GC59	CQ	N	E	ICU PWB (JX−9660 : SEEG)
	CPWBX0064GC53	CT	N	E	ICU PWB (JX−9660 : 特殊国)
	CPWBX0064GC51	CT	N	E	ICU PWB (JX−9660PS : 特殊国)

4 Transport unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	NROLP0037GCZZ	AB		C	Delivery roller
2	MSPRP0083GCZZ	AC		C	Delivery guide spring
3	XRESP50−06000	AA		C	E−Type ring (5mm)
4	MSPRP0085GCZZ	AD		C	Cleaner pressure spring R
5	MSPRP0087GCZZ	AC		C	DR pressure spring
6	MSPRP0099GCZZ	AD		C	Cleaner pressure spring L
7	PGiDM0035GCZZ	AN		C	Delivery guide
8	PCOVP0024GCZ1	AN		C	Fusing cover
9	MSPRT0084GCZZ	AA		C	Fusing cover spring
10	NSFTZ0044GCZZ	AF		C	Fulcrum shaft
11	RLMPU0005GCZZ	AW		B	Heater lamp (110V)
	RLMPU0006GCZZ	AW		B	Heater lamp (120V/127V)
	RLMPU0007GCZZ	AY		B	Heater lamp (220V/240V)

4 Transport unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
12	NROLR0051GCZZ	AM		C	Guide roller
13	PCLR-0006GCZZ	AB		C	Guide roller collar
14	MSPRT0120GCZZ	AC		C	TC spring B
17	MSPRC0118GCZZ	AA		C	Guide roller spring
18	XEBSD30P08000	AA		C	Screw (3×8)
19	XHBSD30P06000	AA		C	Screw (3×6)
20	PGiDH0044GCZZ	AG		C	Fusing front paper guide
21	LHLDZ0023GCZZ	AC		C	TC electrode holder
22	XEPSD26P06000	AA		C	Screw (2.6×6)
23	NSFTZ0039GCZZ	AF		C	PS roller shaft
24	MSPRC0124GCZZ	AB		C	PS earth spring
25	MSPRC0121GCZZ	AA		C	PS roller spring
26	NSFTZ0047GCZZ	AE		C	Gear arm shaft
27	MSPRT0119GCZZ	AA		C	Gear arm spring
30	MARMP0011GCZZ	AE		C	Gear arm
31	NGERH0050GCZZ	AC		C	Transport gear B 31T
32	NGERH0066GCZZ	AC		C	31T gear C
33	XRESP40-06000	AA		C	E type ring (4mm)
34	LFRM-0026GCZZ	AY		C	Transport frame
35	MLEVP0035GCZZ	AD		C	PO actuator
36	NGERH0049GCZZ	AD		C	Transport gear A 31T
37	MSPRC0086GCZ1	AA		C	Pressure spring (100V series)
37	MSPRC0111GCZZ	AB		C	Pressure spring A (200V series)
38	NBRGC0017GCZZ	AD		C	Pressure roller bearing
39	NROLR0036GCZZ	AW		C	Pressure roller
40	NROLM0035GCZZ	AX		C	Heat roller
41	NGERH0051GCZZ	AC		C	Fusing gear 37T
42	LSTPF0007GCZZ	AA		K	HT stopper
43	NBRGC0016GCZZ	AF		C	Heat roller bearing
45	XEBSD40P08000	AA		C	Screw (4×8)
46	LPLTM0109GCZZ	AM		C	Base plate
47	MSPRP0109GCZZ	AC		C	Heater spring
48	PCOVQ0031GCZ1	AH		C	Heater cover
49	XEBSD30P06000	AA		C	Screw (3×6)
50	XHBSD30P04000	AA		C	Screw (3×4)
51	DHAi-0043GCZZ	AC		C	Fusing earth wire
52	LHLDZ0014GCZZ	AE		C	Lamp holder
53	XHBSD30P06000	AA		C	Screw (3×6)
54	RDTCT0011GCZZ	AQ		B	Thermistor
55	XBPSD30P10KSO	AA		C	Screw (3×10KS)
56	CTHM-0011FC01	AK		B	Thermostat
57	PTME-0007GCZZ	AE		C	Separator pawl
58	MSPRT0082GCZZ	AA		C	Separator pawl spring
59	LHLDZ0016GCZZ	AP		C	Separator pawl holder
60	XRESP40-06000	AA		C	E type ring (4mm)
61	NROLP0038GCZA	AR		C	Delivery roller
62	NGERH0065GCZZ	AC		C	Delivery drive gear
63	NGERH0052GCZZ	AC		C	Idle gear
64	XEPSD30P08X00	AA		C	Screw (3×8X)
65	QSLP-0025GCZZ	AF		C	Separator electrode
66	LPiNS0008GCZ1	AB		C	Hinge pin
67	NROLP0048GCZZ	AC		C	PS roller B
68	CPLTM0135GC01	AM		C	DR pressure plate
69	XRESP20-04000	AA		C	E-Type ring (2mm)
70	MSPRT0108GCZZ	AC		C	Pressure plate spring
71	NSFTZ0045GCZZ	AC		C	Pressure plate shaft
72	LPLTM0134GCZ1	AG		C	Fusing pressure plate
74	PSHEP0100GCZZ	AF		C	Paper guide sheet
75	TLABZ0127GCZZ	AB		C	Fusing green label (USA only)
77	NBRGC0029GCZZ	AK		C	Pressure bearing
78	LBNDJ2003SCZZ	AA		C	Band,wire (large)
79	XBPSD30P04000	AA		C	Screw (3×4)
80	TLABH0128GCZZ	AC		D	Caution label
82	LANGF0012GCZZ	AB		C	PS reinforce angle
83	PCASZ0018GCZZ	AE		C	TC case
84	XEPSD30P06000	AA		C	Screw (3×6)
85	MSPRC0125GCZZ	AC		C	TC case spring
86	MSPRT0117GCZZ	AA		C	Guide roller spring
87	MARMP0009GCZZ	AC		C	Guide arm R
88	PGiDM0043GCZZ	AE		C	Separator guide
89	MARMP0010GCZZ	AB		C	Guide arm L
90	CWiR-0001GC01	AH		C	Charger wire
91	MSPRC0116GCZZ	AB		C	TC spring A
92	XRESP15-04000	AA		C	E type ring (1.5mm)
93	DUNT-0075GCZZ	AN		E	TC resistor
	(Unit)				
901	DUNT-0057GC13	BW		E	Transport unit (110V)
901	DUNT-0057GC14	BX		E	Transport unit (120V/127V)
901	DUNT-0057GC15	BX		E	Transport unit (220V/240V)

PRP00124

5 Cassette

PRP00125

6 Packing material & Accessories

Developer Cartridge
(Sales item)

Drum Cartridge
(Sales item)
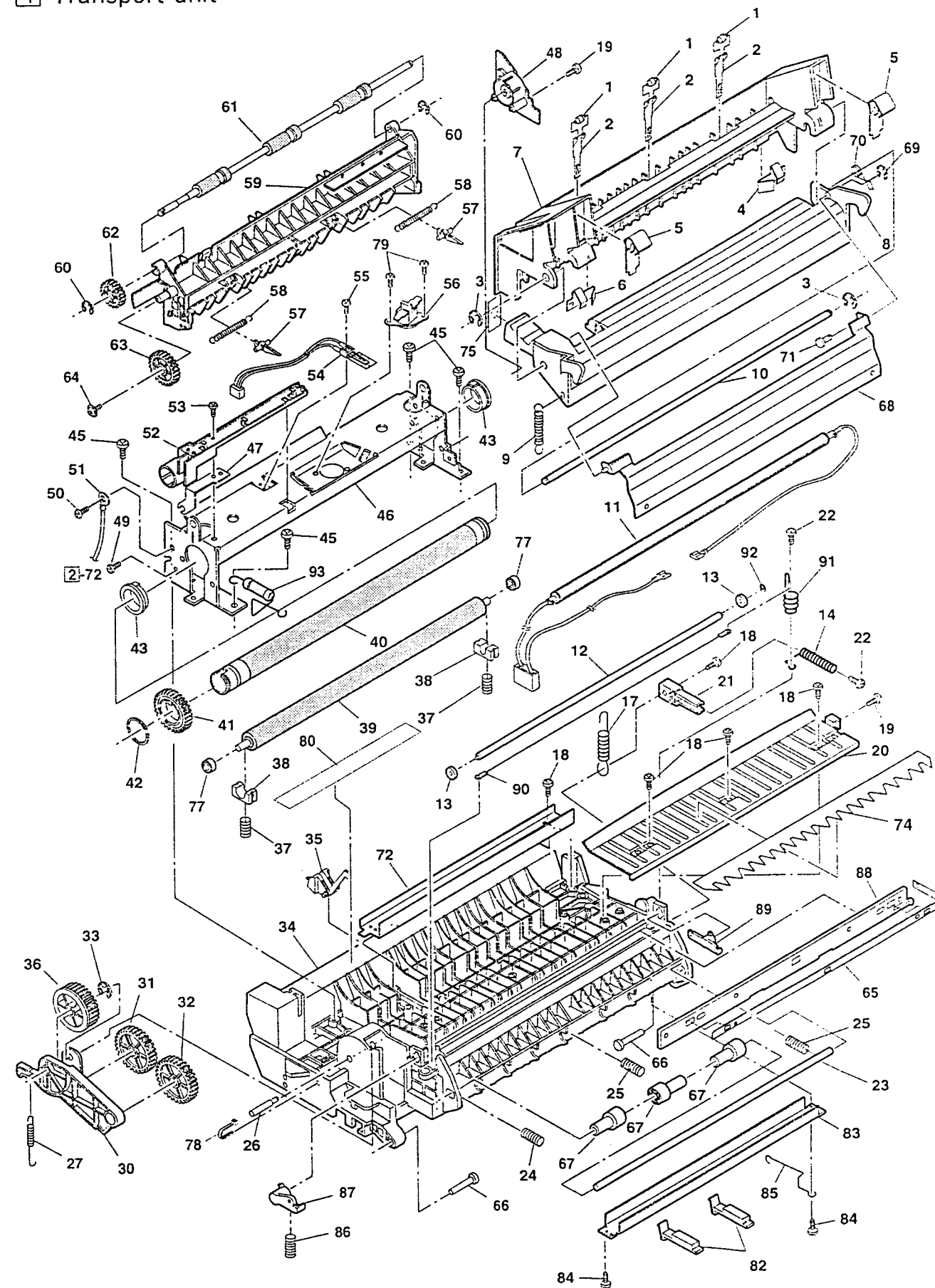
PRP00126
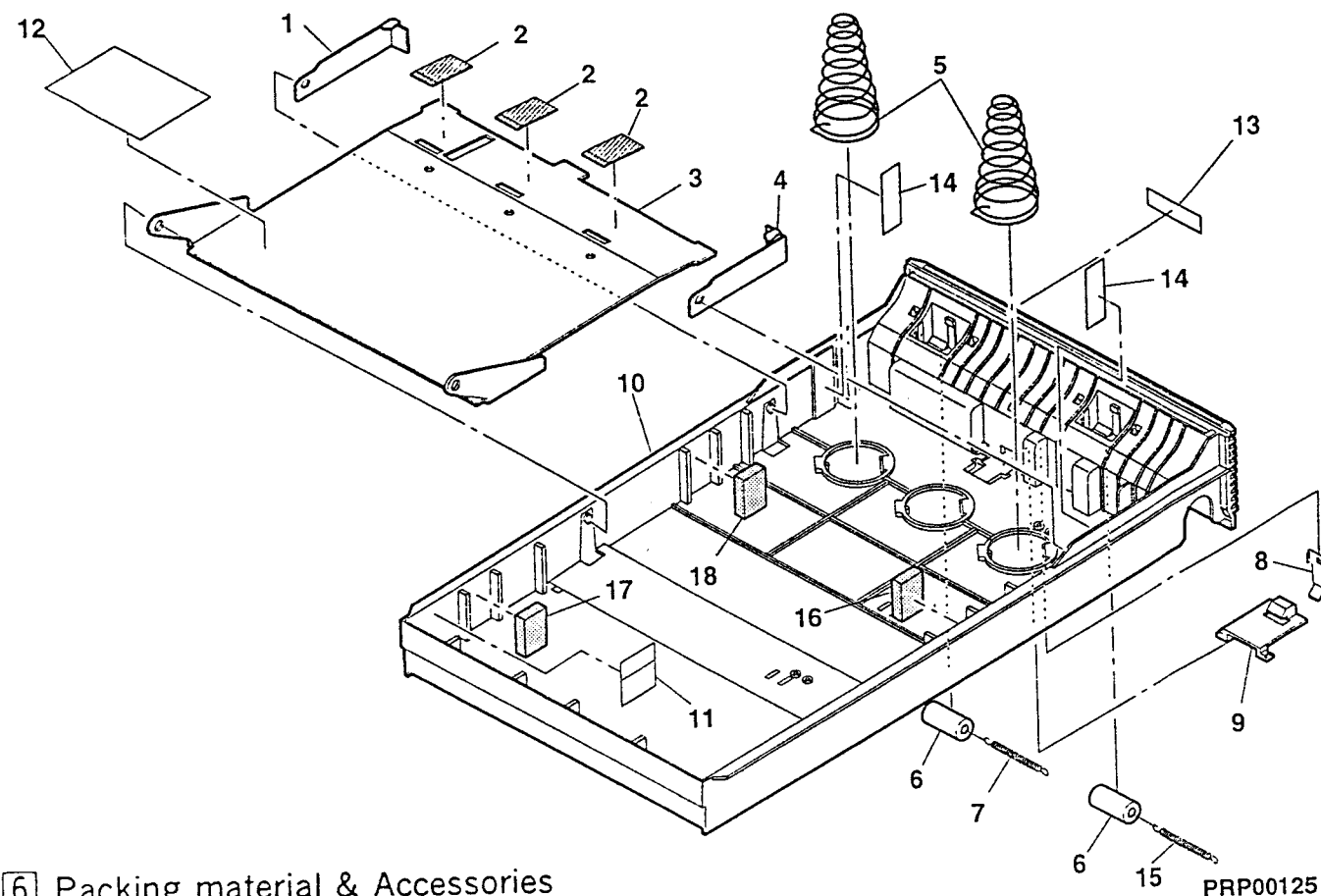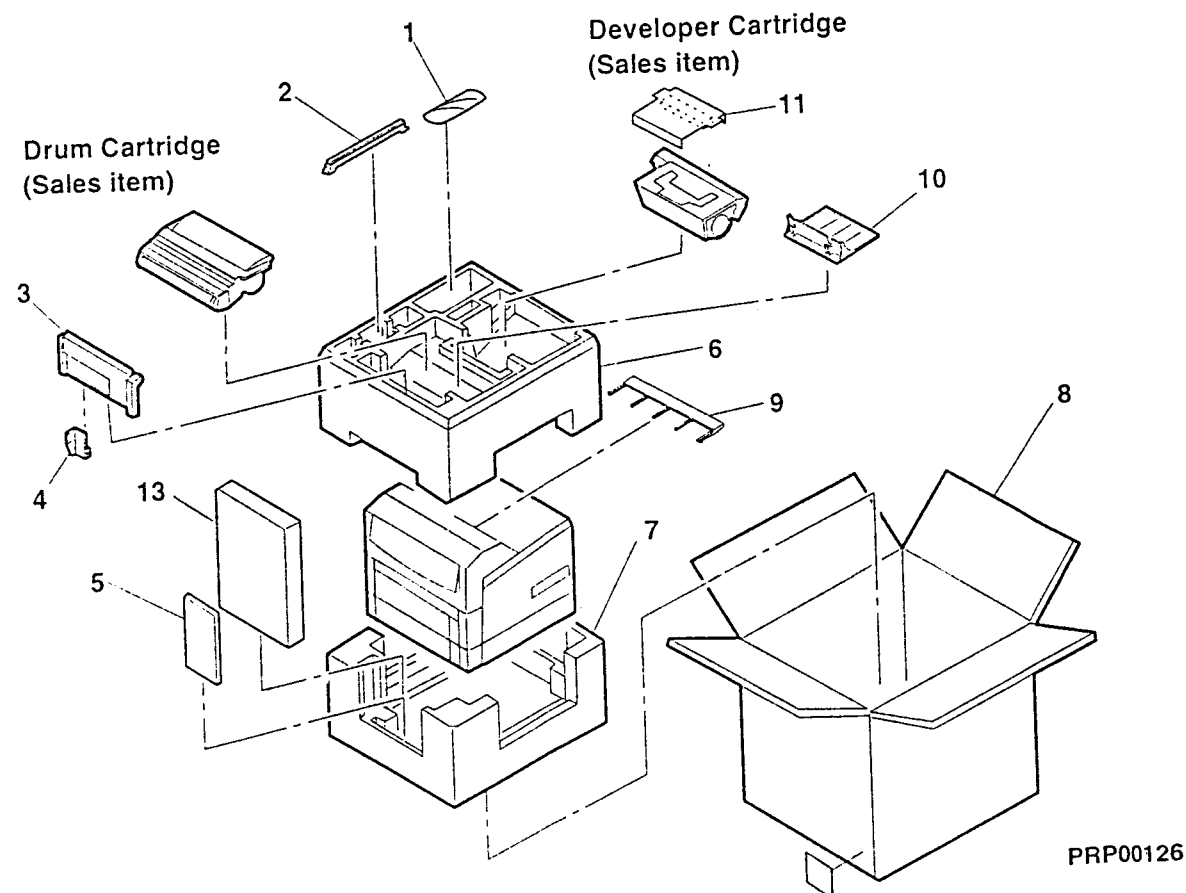
5 Cassette

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	PTME-0009GCZZ	AD		C	Cassette pawl R
2	PSHEZ1606FCZZ	AB		C	Cassette sheet
3	LPLTM0110GCZ1	AP		C	Rotation plate letter (Inch series)
3	LPLTM0111GCZ1	AP		C	Rotation plate A4 (AB series)
4	PTME-0008GCZZ	AD		C	Cassette pawl L
5	MSPRC0110GCZZ	AC		C	Cassette spring
6	NROLP0039GCZZ	AC		C	PF roller
7	MSPRT0128GCZZ	AB		C	PF roller spring
8	MSPRP0088GCZZ	AB		C	Rotation lock spring
9	LSTPP0008GCZZ	AC		C	Rotation stopper
10	GCASP0007GCL2	AS		D	Cassette case letter (Inch series)
10	GCASP0007GCA2	AV		D	Cassette case A4 (AB series)
11	TLABZ0176GCZZ	AC		D	Label
12	TLABH0096GCZZ	AD		C	Operation instruction label
13	TLABZ0095GCZZ	AC		C	Cassette size label letter (Inch series)
13	TLABZ0098GCZZ	AC		C	Cassette size label A4 (AB series)
14	LPLTM0138GCZZ	AC		C	Cassette side plate
15	MSPRT0129GCZZ	AB		C	PF roller spring
16	PMLT-0035GCZZ	AB		C	Cassette cushion C (Inch series)
17	PMLT-0033GCZZ	AB		C	Cassette cushion A (AB series)
18	PMLT-0034GCZZ	AB		C	Cassette cushion B (AB series)

6 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	QACCD6611QCN2	AX		B	AC cord (125V 10A)(USA,CANADA,Costa Rica,Brazil)	
	QACCL7620QCZZ	AW		B	AC cord(Australia plug) (250V 6A)(Australia,New Zealand)	
	QACCV6621QCN1	AU		B	AC cord(φ4.8 2pin)(250V 10A)(SEEG,Pakistan,Uruguay,Argentine, Paraguay,Indonesia,Kuwait,Oman,Katar,Greece,West Africa)	
	QACCV6621QCN1	AU		B	AC cord(φ4.8 2pin)(250V 10A)(Lebanon,Iran,India,Nigeria,Algeria, Egypt,Iraq,Bangladesh,Turkey,Tunisia,Jordan)	
	QACCV6621QCN1	AU		B	AC cord(φ4.8 2pin) (250V 10A)(Syria,U.A.E,Thailand)	
	QACCB7620QCN1	AX		B	AC cord(BS plug)(250V 6A) (Cyprus,Malaysia,Bahrain,North Yemen,Saudi Arabia)	
	QACCD7613QCN5	AQ		B	AC cord (125V 10A)(Barbados)	
	QACCJ9610QCZZ	AR		B	AC cord(125V 12A)(Dominica,Middle Ameribia, Venezuela,Indonesia,Taiwan,Ecuador)	
	QCNW-0132FCZZ	AV		B	Inlet AC cord(φ4 2pin) (Chile,Peru)	
	QCNW-0122FCZZ	AR		B	AC wire (Saudi Arabia)	
	QPLGA0002QCZZ	AN		C	AC plug (125V 15A)(Saudi Arabia)	
	QTANP0096FCZZ	AA		C	AC terminal (V2M3)(Saudi Arabia)	
	PHOG-1023CCZZ	AB		C	AC plug protect (South Africa,Sli Lanka,Hong kong)	
	QACCB7521QCZZ	AS		B	AC cord (250V 6A)(South Africa,Sli Lanka,Hong kong,Israel)	
	QPLGA4171CCZZ	AN		C	AC plug(3pin) (South Africa,Sli Lanka,Hong kong)	
	QPLGA0001QCZZ	AN		C	AC plug (Israel)	
	QACCF7620QCZZ	AX		B	AC cord (250V 6A)(Singapore)	
	QACCB7622QCZZ	BA		B	AC cord (U,Kingdom only)	
2	CHLDZ0015GC01	AK		C	Cleaner holder	
3	PGiDM0038GCZZ	AH		D	Manual feeding tray	
4	PGiDM0039GCZZ	AD		D	Paper guide	
5	TiNSE0106GCZZ	AW	N	D	Operation manual(USA)	
	TiNSE0107GCZZ	AW	N	D	Instruction book(English)	
	TiNSF0109GCZZ	AW	N	D	Instruction book(French)	
	TiNSG0108GCZZ	AW	N	D	Instruction book(German)	
	TiNSH0113GCZZ	AW	N	D	Instruction book(Dutch)	
	TiNSi0112GCZZ	AW	N	D	Instruction book(Italian)	
	TiNSS0110GCZZ	AW	N	D	Instruction book(Spanish)	
	TiNSZ0111GCZZ	AW	N	D	Instruction book(Sweden)	
6	SPAKA0221GCZZ	AR		D	Top packing cushion	
7	SPAKA0222GCZZ	AR		D	Bottom packing cushion	
8	SPAKC0418GCZZ	AX	N	D	Packing case(USA,Canada)	(JX-9660)
	SPAKC0417GCZZ	AW	N	D	Packing case	(JX-9660)
	SPAKC0415GCZZ	AX	N	D	Packing case(USA,Canada)	(JX-9660PS)
	SPAKC0414GCZZ	AW	N	D	Packing case(Other countries)	(JX-9660PS)
9	PCOVP0033GCZ1	AH		C	Delivery guide cover	
10	CSOU-0005GC01	AK		C	Extension tray	
11	SPAKA0280GCZZ	AH		D	DV fixer packing cushion	
13	SPAKA0278GCZZ	AD		D	Cassette fixing cushion (SEEG only)	
101	SSAKA3001CCZZ	AA		D	Vinyl bag for AC cord (140×360mm)	
102	SSAKA3340QCZZ	AB		D	Vinyl bag for Accessories (320×380mm)	
103	UBAGF0018FCZZ	AE		D	Drum protect bag (USA only)	
105	CCLEZ0014GC01	AM		C	CH cleaner	
106	LSTPP0009GCZZ	AC		C	Rotation plate lock stopper	
107	TCADZ2001QCZA	AE		D	Card (Australia only)	
108	TGANE1001CSZZ	AC		D	Warranty card (CANADA only)	
	TGANE1001QCZA	AC		D	Warranty card (Australia only)	
109	TCADZ0015GCZZ	AD		D	Reference card (SEEG only)	
110	TCADE0014GCZZ	AD		D	Card (USA only)	

6 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
111	TCADZ0028GCZZ	AF		D	TW instruction card (USA only)
112	SSAKA0005WCZZ	AA		D	Vinyl bag (160×260mm)
113	TCADZ0036GCZZ	AC		D	Licence card
114	TCADZ0038GCZZ	AE		D	Window install card
115	TCADZ0041GCZZ	AE		D	Card (SEEG only)
116	UFLPB0012GCZZ	AQ		D	Media (Font)
117	UFLPB0010GCZZ	AS		D	Media (Windows)
118	TCADZ0037GCZZ	AD	N	D	MAC install card (except SEEG)
119	UFLPB0009GCZZ	AQ	N	D	Media (MAC install) (except SEEG)

7 MD PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCKYPU1HB471K	AA		C	Capacitor (50WV 470PF)	[C1]
2	VCKYPU1HB222K	AA		C	Capacitor (50WV 2200PF)	[C2]
3	VCKYPU1HB222K	AA		C	Capacitor (50WV 2200PF)	[C3]
4	VCEAEA1HW106M	AA		C	Capacitor (50WV 10µF)	[C4]
5	VCKYPU1HB471K	AA		C	Capacitor (50WV 470PF)	[C5]
6	VCTYPU1HF104Z	AB		C	Capacitor (50WV 0.10µF)	[C6]
7	QCNCM0035GCZZ	AH		C	Connector (20pin)	[CN202]
8	QCNCM0035GCZZ	AH		C	Connector (20pin)	[CN203]
9	QCNCW0535FCZZ	AB		C	Connector (6pin)	[CN206]
10	VHiSLA7024M-P	AT		B	IC (SLA7024M)	[IC1]
11	VHViCPN50//-1	AE		B	IC protector (ICPN50)	[ICP50]
12	VRS-RE3DA1R0J	AB		C	Resistor (2W 1.0Ω ±5%)	[R1]
13	VRD-RC2EY473J	AA		C	Resistor (1/4W 47KΩ ±5%)	[R2]
14	VRD-RC2EY621J	AA		C	Resistor (1/4W 620Ω ±5%)	[R3]
15	VRD-RC2EY473J	AA		C	Resistor (1/4W 47KΩ ±5%)	[R4]
16	VRD-RC2EY242J	AA		C	Resistor (1/4W 2.4KΩ ±5%)	[R5]
17	VRD-RC2EY242J	AA		C	Resistor (1/4W 2.4KΩ ±5%)	[R6]
18	VRS-RE3DA1R0J	AB		C	Resistor (2W 1.0Ω ±5%)	[R7]
19	VRD-RC2EY121J	AA		C	Resistor (1/4W 120Ω ±5%)	[R8]
20	DHAi-0046GCZZ	AF		C	MD harness	
21	DHAi-0048GCZZ	AE		C	DSW harness	
	(Unit)					
901	CPWBF0050GC71	BB		E	MD PWB	

8 Cassette PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCEAEA1AW476M	AB		C	Capacitor (10WV 47µF)	[C1]
2	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C2]
3	DHAi-0047GCZZ	AG		C	CS harness	[CN301]
4	QCNCM0033GCZZ	AC		C	Connector (3pin)	[CN303]
5	QCNCM0034GCZZ	AC		C	Connector (2pin)	[CN304]
6	QCNCM0034GCZZ	AC		C	Connector (2pin)	[CN305]
7	QSW-P0006GCZZ	AB		B	Push switch	[CS1L]
8	QSW-P0006GCZZ	AB		B	Push switch	[CS1U]
9	QSW-P0006GCZZ	AB		B	Push switch	[CS2L]
10	QSW-P0006GCZZ	AB		B	Push switch	[CS2U]
11	QSW-P0006GCZZ	AB		B	Push switch	[CS3L]
12	QSW-P0006GCZZ	AB		B	Push switch	[CS3U]
13	VHiSN74LS151N	AG		B	IC (SN74LS151)	[IC1]
14	VHPGP1S53V/-1	AE		B	Photo interruptor (GP1S53V)	[PEL]
15	VHPGP1S53V/-1	AE		B	Photo interruptor (GP1S53V)	[PEU]
16	RPLU-0001GCZZ	AM		B	Pick up solenoid 1	[PUSL]
17	RPLU-0001GCZZ	AM		B	Pick up solenoid 1	[PUSU]
18	VRD-RC2EY121J	AA		C	Resistor (1/4W 120Ω ±5%)	[R1]
19	VRD-RC2EY203J	AA		C	Resistor (1/4W 20KΩ ±5%)	[R2]
20	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R3]
21	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R4]
22	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R5]
23	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R6]
24	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R7]
25	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R8]
26	VRD-RC2EY203J	AA		C	Resistor (1/4W 20KΩ ±5%)	[R9]
27	VRD-RC2EY181J	AA		C	Resistor (1/4W 180Ω ±5%)	[R10]
28	DHAi-0050GCZZ	AL		C	OPU harness	
29	XBBSD30P06000	AA		C	Screw (3×6)	
	(Unit)					
901	CPWBF0051GC51	BD		E	Cassette PWB	

9 PCU PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	RALMB5006SCZZ	AD		B	Buzzer (EFB−RD22C01)	[BZ1]
2	VCEAEA1AW476M	AB		C	Capacitor (10WV 47μF)	[C1]
3	VCEAEA1HW106M	AA		C	Capacitor (50WV 10μF)	[C2]
4	VCEAEA1AW476M	AB		C	Capacitor (10WV 47μF)	[C3]
5	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C4]
6	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C5]
7	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C6]
8	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C7]
9	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C8]
10	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C9]
11	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C10]
12	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C11]
13	VCCCTV1HH180J	AA		C	Capacitor (50WV 18PF)	[C12]
14	VCCCTV1HH180J	AA		C	Capacitor (50WV 18PF)	[C13]
15	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C14]
16	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C15]
17	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C16]
18	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C17]
19	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C18]
20	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C19]
21	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C20]
22	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C21]
23	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C22]
24	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C23]
25	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C24]
26	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C25]
27	QCNCW0028GCZZ	AE		C	Connector (28pin)	[CN101]
28	QCNCW0029GCZZ	AD		C	Connector (21pin)	[CN102]
29	QCNCW0036GCZZ	AB		C	Connector (4pin)	[CN103]
30	QCNCM0032GCZZ	AH		C	Connector (20pin)	[CN104]
31	QCNCM1005MCZZ	AB		B	Connector (2pin)	[CN105]
32	QCNCM2334SC0B	AB		B	Connector (2pin)	[CN106]
33	VHDDSS133HV−1	AA		C	Diode (DSS133HV)	[D1]
34	VHDDSS133HV−1	AA		C	Diode (DSS133HV)	[D2]
35	VHDDSS133HV−1	AA		C	Diode (DSS133HV)	[D3]
36	VHDDSS133HV−1	AA		C	Diode (DSS133HV)	[D4]
37	VHDDSS133HV−1	AA		C	Diode (DSS133HV)	[D5]
38	VHDDSS133HV−1	AA		C	Diode (DSS133HV)	[D6]
39	VHiX24C44P／−1	AN		B	IC (X24C44P)	[IC1]
40	VHiSN74LS00−1	AE		B	IC (SN74LS00)	[IC2]
41	VHiBA6886N／−1	AL		B	IC (BA6886N)	[IC3]
42	VHiM37451S326	AX	N	B	IC (M37451S326)	[IC4]
43	VHiULN2003AN1	AE		B	IC (ULN2003AN1)	[IC5]
44	VHiULN2003AN1	AE		B	IC (ULN2003AN1)	[IC6]
45	VHiPST575CMT／	AE		B	IC (PST575CMT)	[IC7]
46	VHViCPN20／／−1	AD		B	IC protector (ICP−N20)	[ICP20]
47	VRD−RC2EY102J	AA		C	Resistor (1/4W 1.0KΩ ±5%)	[R1]
48	VRD−RC2EY622J	AA		C	Resistor (1/4W 6.2KΩ ±5%)	[R2]
49	VRD−RC2EY102J	AA		C	Resistor (1/4W 1.0KΩ ±5%)	[R3]
50	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R4]
51	VRD−RC2EY100J	AA		C	Resistor (1/4W 10Ω ±5%)	[R5]
52	VRD−RC2EY100J	AA		C	Resistor (1/4W 10Ω ±5%)	[R6]
53	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R7]
54	VRD−RC2EY512J	AA		C	Resistor (1/4W 5.1KΩ ±5%)	[R8]
55	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R9]
56	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R10]
57	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R11]
58	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R12]
59	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R13]
60	VRS−RE3AA5R1J	AB		C	Resistor (1W 5.1Ω ±5%)	[R14]
61	VRD−RC2EY165J	AA		C	Resistor (1/4W 1.6MΩ ±5%)	[R15]
62	VRD−RC2EY100J	AA		C	Resistor (1/4W 10Ω ±5%)	[R16]
63	VRD−RC2EY471J	AA		C	Resistor (1/4W 470Ω ±5%)	[R17]
64	VRD−RC2EY105J	AA		C	Resistor (1/4W 1.0MΩ ±5%)	[R18]
65	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R19]
66	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R20]
67	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R21]
68	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R22]
69	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R23]
70	VRD−RC2EY200J	AA		C	Resistor (1/4W 20Ω ±5%)	[R24]
71	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R25]
72	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R26]
73	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R27]
74	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R28]
75	VRD−RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)	[R29]
76	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R30]
77	VRS−RE3AA5R1J	AB		C	Resistor (1W 5.1Ω ±5%)	[R31]
78	VRNRC2EK4701F	AA		C	Resistor (1/4W 4.70KΩ ±1%)	[R32]
79	VRD−RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R33]
80	VRS−TP2BD203J	AA		C	Resistor (1/8W 20KΩ ±5%)	[R34]

9 PCU PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
81	VRS-TP2BD203J	AA		C	Resistor (1/8W 20KΩ ±5%)	[R35]
82	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R36]
83	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R37]
84	VRS-TP2BD103J.	AA		C	Resistor (1/8W 10KΩ ±5%)	[R38]
85	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R39]
86	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R40]
87	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R41]
88	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R42]
89	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R43]
90	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R44]
91	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R45]
92	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R46]
93	RMPTC4202QCJB	AA		B	Block resistor (2.0KΩ×4 1/8W ±5%)	[RA1]
94	RMPTC4103QCJB	AD		B	Block resistor (10KΩ×4 1/8W ±5%)	[RA2]
95	RCRSQ2052HCZZ	AH		B	Crystal (12.288MHz)	[X1]
96	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%)	
	(Unit)					
901	CPWBF0049GC59	BQ		E	PCU PWB	

10 ICU PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	RCORF1005ACZZ	AB		C	Core (BLM41A01)	[BF1]
2	RCORF0003GCZZ	AH		C	Core (B5)	[BF2]
3	RCORF1009ACZZ	AC		C	Core (BLM32A06)	[BF3]
4	RCORF1009ACZZ	AC		C	Core (BLM32A06)	[BF5~7]
5	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%)	[BF8]
6	RCORF1009ACZZ	AC		C	Core (BLM32A06)	[BF9]
7	RCORF1009ACZZ	AC		C	Core (BLM32A06)	[BF10]
8	RCORF1009ACZZ	AC		C	Core (BLM32A06)	[BF12]
9	VRS-TP2BD330J	AA		C	Resistor (1/8W 33Ω ±5%)	[BF13]
10	RCORF1005ACZZ	AB		C	Core (BLM41A01)	[BF14]
11	RCORF1005ACZZ	AB		C	Core (BLM41A01)	[BF15]
12	RCORF1009ACZZ	AC		C	Core (BLM32A06)	[BF16]
13	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%)	[BF17]
14	VCEAJA1CW226M	AB		C	Capacitor (16WV 22µF)	[C1]
15	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C2]
16	VCEAJA1CW226M	AB		C	Capacitor (16WV 22µF)	[C3]
17	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C4]
18	VCEAJA1CW226M	AB		C	Capacitor (16WV 22µF)	[C5]
19	VCEAJA1CW226M	AB		C	Capacitor (16WV 22µF)	[C6]
20	VCKYTV1HR152K	AA		C	Capacitor (50WV 1500PF)	[C7]
21	VCKYTV1HR102K	AA		C	Capacitor (50WV 1000PF)	[C8]
22	VCKYTV1HR152K	AA		C	Capacitor (50WV 1500PF)	[C9]
23	VCKYTV1HR152K	AA		C	Capacitor (50WV 1500PF)	[C10]
24	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C11~27]
25	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C29]
26	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF)	[C30]
27	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C31]
28	VCKYTV1HR102K	AA		C	Capacitor (50WV 1000PF)	[C32]
29	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C33~35]
30	VCCCTV1HH271J	AA		C	Capacitor (50WV 270PF)	[C36]
31	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C37~41]
32	VCKYTQ1HB392K	AB		C	Capacitor (50WV 3900PF)	[C42]
33	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C43~45]
34	VCCCTV1HH330J	AA		C	Capacitor (50WV 33pF)	[C46]
35	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C47]
36	VCCCTV1HH271J	AA		C	Capacitor (50WV 270PF)	[C48]
37	VCKYTQ1HB392K	AB		C	Capacitor (50WV 3900PF)	[C49]
38	VCCCTV1HH120J	AA		C	Capacitor (50WV 12PF)	[C50]
39	VCKYTV1HR152K	AA		C	Capacitor (50WV 1500PF)	[C52]
40	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C53]
41	VCCCTV1HH470J	AA		C	Capacitor (50WV 47PF)	[C54]
42	VCCCTV1HH390J	AA		C	Capacitor (50WV 39PF)	[C55]
43	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C57]
44	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C58]
45	VCCCTV1HH330J	AA		C	Capacitor (50WV 33pF)	[C59]
46	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF)	[C60]
47	VCCCTV1HH330J	AA		C	Capacitor (50WV 33pF)	[C61]
48	VCCCTV1HH101J	AA		C	Capacitor (50WV. 100PF)	[C62]
49	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C63]
50	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C64]
51	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF)	[C65~67]
52	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10µF)	[C68~71]
53	VCCCTV1HH330J	AA		C	Capacitor (50WV 33pF)	[C72]
54	VCCCTV1HH470J	AA		C	Capacitor (50WV 47PF)	[C73]

10 ICU PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
55	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C74]
56	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C75]
57	VCKYTV1HR102K	AA		C	Capacitor (50WV 1000PF) [C76]
58	VCKYTV1HR561K	AA		C	Capacitor (50WV 560PF) [C77]
59	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C78~81]
60	VCCCTV1HH390J	AA		C	Capacitor (50WV 39PF) [C82]
61	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C83]
62	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF) [C84]
63	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C87~89]
64	QCNCM0688FCZZ	AR		C	Connector (60pin) [CN502]
65	QCNCW0021GCZZ	AM		C	Connector (68pin) [CN503(JX−9660：except SEEG)]
66	QCNCW0042GCZZ	AM		C	Connector (68pin) [CN503(JX−9660PS,JX−9660：SEEG)]
67	QCNCW0021GCZZ	AM		C	Connector (68pin) [CN504(JX−9660：except SEEG)]
68	QCNCW0042GCZZ	AM		C	Connector (68pin) [CN504(JX−9660PS,JX−9660：SEEG)]
69	QCNCW0341FCZZ	AG		C	Connector (13pin) [CN505]
70	QCNCW0040GCZZ	AK		C	Connector (68pin) [CN506]
71	QCNCW0020GCZZ	AH		C	Connector (40pin) [CN507(JX−9660)]
72	QCNCW0041GCZZ	AH		C	Connector (40pin) [CN507(JX−9660PS)]
73	QCNCM0045GCZZ	AM		C	Connector (60pin) [CN508]
74	QCNCM0045GCZZ	AM		C	Connector (60pin) [CN509]
75	VHiL7A1191///	BD		B	IC (L7A1191) [IC1]
76	VHi4M16SOJ−70	BG		B	IC (4M16SOJ−70) [IC2]
77	VHi4M16SOJ−70	BG		B	IC (4M16SOJ−70) [IC3]
78	VHiAM29005−16	BV		B	IC (AM29005−16) [IC4]
79	VHiMSM514212/	AY		B	IC (MSM514212) [IC7]
80	VHiMSM514212/	AY		B	IC (MSM514212) [IC8]
81	VHiLZ95H42///	AW		B	IC (LZ95H42) [IC9]
82	VHi27C4051AGC	BK		B	IC (27C4051AGC) [IC10 (特殊国)]
83	QSOCZ0002GCZZ	AD		C	IC socket (40pin) [IC10~13]
84	VHiLH534U0D−1	AY	N	B	IC (LH534U0D) [IC10 (特殊国を除く)]
85	VHi27C4052AGC	BK		B	IC (27C4052AGC) [IC11 (特殊国)]
86	VHiLH534U0E−1	AY	N	B	IC (LH534U0E) [IC11 (特殊国を除く)]
87	VHi27C4053AGC	BK		B	IC (27C4053AGC) [IC12 (特殊国)]
88	VHiLH534U0F−1	AY	N	B	IC (LH534U0F) [IC12 (特殊国を除く)]
89	VHiLH534U0G−1	AY	N	B	IC (LH534U0G) [IC13 (特殊国を除く)]
90	VHi27C4054AGC	BK		B	IC (27C4054AGC) [IC13 (特殊国)]
91	VHiSN74LS244N	AS		B	IC (SN74LS244N) [IC14]
92	VHiSN74LS244N	AS		B	IC (SN74LS244N) [IC15]
93	VHiSN74LS244N	AS		B	IC (SN74LS244N) [IC16]
94	VHiMC74F139MR	AF		B	IC (MC74F139MR) [IC17]
95	VHi74F08SJ/−1	AE		B	IC (74F08SJ) [IC18]
96	VHi74F245SJ−1	AG		B	IC (74F245SJ) [IC19]
97	VHi74F245SJ−1	AG		B	IC (74F245SJ) [IC20]
98	VHi74LS153NS−	AE		B	IC (74LS153NS) [IC21]
99	VHi74F153SJ−1	AF		B	IC (74F153SJ) [IC22]
100	VHiX24C04////	AT		B	IC (X24C04) [IC23]
101	VHi74F153SJ−1	AF		B	IC (74F153SJ) [IC24~27]
102	VHi74F245SJ−1	AG		B	IC (74F245SJ) [IC28]
103	VHi74F245SJ−1	AG		B	IC (74F245SJ) [IC29]
104	VHi74F245SJ−1	AG		B	IC (74F245SJ) [IC30~33]
105	VHi74F32SJ/−1	AE		B	IC (74F32SJ) [IC34]
106	VHi74F163SJ−1	AK		B	IC (74F163SJ) [IC35]
107	VHi74VHC74//R	AE		B	IC (74VHC74) [IC36]
108	VHi74VHC244/R	AH		B	IC (74VHC244) [IC37]
109	VHi74F163SJ−1	AK		B	IC (74F163SJ) [IC38]
110	VHiSN74S04NS/	AE		B	IC (SN74S04NS) [IC39]
111	VHi74F32SJ/−1	AE		B	IC (74F32SJ) [IC40]
112	VHi74F08SJ/−1	AE		B	IC (74F08SJ) [IC41]
113	VHiMC74F157MF	AH		B	IC (MC74F157MF) [IC42~46]
114	VHiSN74LS166/	AH		B	IC (SN74LS166) [IC47]
115	VHiMC74HC14AF	AD		B	IC (MC74HC14AF) [IC48]
116	VHi74F08SJ/−1	AE		B	IC (74F08SJ) [IC49]
117	VHiMC74F157MF	AH		B	IC (MC74F157MF) [IC50]
118	VHiMC74F157MF	AH		B	IC (MC74F157MF) [IC51]
119	VHi74F273SJ−1	AG		B	IC (74F273SJ) [IC52]
120	VHi74F374SJ−1	AN		B	IC (74F374SJ) [IC53]
121	VHiMC74F157MF	AH		B	IC (MC74F157MF) [IC54]
122	VHiMC74F157MF	AH		B	IC (MC74F157MF) [IC55]
123	VHiMC74F175M/	AF		B	IC (MC74F175M) [IC56]
124	VHi74F374SJ−1	AN		B	IC (74F374SJ) [IC57]
125	RCiLC5014NCZZ	AG		C	Coil (SF−T3−20−01) [L1]
126	VRD−RB2HY120J	AA		C	Resistor (1/2W 12Ω ±5%) [R1]
127	VRD−RB2HY101J	AA		C	Resistor (1/2W 100Ω ±5%) [R2]
128	VRS−TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%) [R3~5]
129	VRS−TP2BD101J	AA		C	Resistor (1/8W 100Ω ±5%) [R6]
130	VRS−TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%) [R7]
131	VRS−TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%) [R8~16]
132	VRS−TP2BD561J	AA		C	Resistor (1/8W 560Ω ±5%) [R17]
133	VRS−TP2BD561J	AA		C	Resistor (1/8W 560Ω ±5%) [R18]
134	VRS−TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%) [R19]

10 ICU PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
135	VRS-TP2BD561J	AA		C	Resistor (1/8W 560Ω ±5%)	[R20]
136	VRS-TP2BD561J	AA		C	Resistor (1/8W 560Ω ±5%)	[R21]
137	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R22~41]
138	VRS-TP2BD330J	AA		C	Resistor (1/8W 33Ω ±5%)	[R42~50]
139	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R51~58]
140	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%)	[R59~61]
141	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R62]
142	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%)	[R63~65]
143	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R66~79]
144	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%)	[R81~87]
145	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R88~95]
146	VRS-TP2BD330J	AA		C	Resistor (1/8W 33Ω ±5%)	[R96]
147	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R97]
148	VRS-TP2BD330J	AA		C	Resistor (1/8W 33Ω ±5%)	[R98]
149	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R99~107]
150	VRS-TP2BD332J	AA		C	Resistor (1/8W 3.3KΩ ±5%)	[R108]
151	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%)	[R109~112]
152	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R113~116]
153	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%)	[R117]
154	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R118]
155	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R119]
156	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%)	[R120]
157	VRS-TP2BD101J	AA		C	Resistor (1/8W 100Ω ±5%)	[R121]
158	VRS-TP2BD101J	AA		C	Resistor (1/8W 100Ω ±5%)	[R122]
159	VRS-TP2BD561J	AA		C	Resistor (1/8W 560Ω ±5%)	[R123]
160	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%)	[R124~130]
161	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%)	[R131]
162	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%)	[R132]
163	VRS-TP2BD330J	AA		C	Resistor (1/8W 33Ω ±5%)	[R133]
164	RMPTC8103QCKB	AD		B	Block resistor (10KΩ×8 1/8W ±10%)	[RA1~3]
165	RMPTC8222QCKB	AD		B	Block resistor (2.2KΩ×8 1/8W ±10%)	[RA4]
166	RMPTC8222QCKB	AD		B	Block resistor (2.2KΩ×8 1/8W ±10%)	[RA5]
167	RCRSZ0013GCZZ	AQ	N	B	Crystal (30.4042MHz)	[X2]
168	RCRSZ0014GCZZ	AR		B	Crystal (28MHz)	[X3]
169	RCRSZ1009HCZZ	AR		B	Crystal (19.66MHz)	[X4]
170	HPNLC0011GCZ1	AG		C	Dummy I/F panel (JX-9660)	
171	HPNLC0013GCZZ	AL		C	I/F panel	
172	LPLTM0137GCZZ	AC		C	FC earth plate	
173	LX-BZ0016GCZZ	AB		C	Screw	
174	PGiDM0040GCZZ	AG		C	W card guide	
175	PSHEP0105GCZZ	AC		C	ICU sheet	
176	VCKYPU1HB101K	AA		C	Capacitor (50WV 100PF)	
177	XBPSD30P16KS0	AA		C	Screw (3×16KS)	
178	XNESD30-24000	AA		C	Nut (3mm)	
	(Unit)					
901	CPWBX0064GC57	CP	N	E	ICU PWB	(JX-9660 : except SEEG,特殊国を除く)
	CPWBX0064GC55	CQ	N	E	ICU PWB	(JX-9660PS :特殊国を除く)
	CPWBX0064GC59	CQ	N	E	ICU PWB	(JX-9660 : SEEG)
	CPWBX0064GC53	CT	N	E	ICU PWB	(JX-9660 :特殊国)
	CPWBX0064GC51	CT	N	E	ICU PWB	(JX-9660PS :特殊国)

11 Power supply PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VHDRBV604//-1	AH		B	Diode (RBV-604)(100V series)	[BD701]
2	VHDRBV606//-1	AH		B	Diode (RBV606)(200V series)	[BD701]
3	RC-FZ084DPAZZ	AE		C	Capacitor (0.22MF/125V)	[C701]
4	RC-FZ084DPAZZ	AE		C	Capacitor (0.22MF/125V)	[C702]
5	RC-KZ003DPAZZ	AC		C	Capacitor (2200PF/250V)(200V series)	[C705]
6	RC-KZ003DPAZZ	AC		C	Capacitor (2200PF/250V)(200V series)	[C706]
7	RC-QZ0044PAZZ	AC		C	Capacitor (470PF/125V)(100V series)	[C707]
8	RC-QZ0045PAZZ	AB		C	Capacitor ((KC)1000pF/125V)(200V series)	[C707]
9	RC-QZ0047PAZZ	AC		C	Capacitor (3300pF/400V)(100V series)	[C708]
10	RC-QZ0048PAZZ	AC		C	Capacitor (4700PF/400V)(200V series)	[C708]
11	RC-EZ0305PAZZ	AN		C	Capacitor (120MF/400V(GQ))(200V series)	[C709]
12	RC-EZ0306PAZZ	AM		C	Capacitor (470MF/200V(MX))(100V series)	[C709]
13	RC-KZ0064PAZZ	AB		C	Capacitor ((HR)220PF/1KV)(200V series)	[C710]
14	RC-EZ0319PAZZ	AD		C	Capacitor (50WV 47μF)	[C711]
15	RC-KZ0032PAZZ	AB		C	Capacitor ((HR)1000PF/500V)(200V series)	[C714]
16	RC-QZS104AFYK	AB		C	Capacitor (104PF/K/50V)(200V series)	[C715]
17	VCEA1S1HM105M	AB		C	Capacitor (50WV 1.0μF)(200V series)	[C717]
18	RC-FZ083DPAZZ	AD		C	Capacitor (0.1MF/125V)(100V series)	[C718]
19	RC-FZ085DPAZZ	AF		C	Capacitor (0.33MF/250V)(200V series)	[C718]
20	VCEA1S1VM108M	AE		C	Capacitor (50WV 1000μF)	[C720]
21	VCEA1S1VM108M	AE		C	Capacitor (50WV 1000μF)(200V series)	[C721]
22	VCCSPA1H6101J	AA		C	Capacitor (50WV 100PF)(200V series)	[C722]

11 Power supply PWB

	NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
	23	RC-QZS104AFYK	AB		C	Capacitor (104PF/K/50V)(200V series)	[C723]
	24	VCEA1S1VM108M	AE		C	Capacitor (50WV 1000μF)(200V series)	[C726]
⚠	25	RC-KZ004DPAZZ	AD		C	Capacitor (KD 3300PF/250V)(200V series)	[C731]
	26	RC-QZA102AFYK	AA		C	Capacitor (102PF/K/50V)	[C733]
⚠	27	RC-QZ0048PAZZ	AC		C	Capacitor (4700PF/400V)(200V series)	[C734]
	28	RC-EZ0320PAZZ	AC		C	Capacitor (50WV 10μF)(200V series)	[C735]
⚠	29	RC-QZ0045PAZZ	AB		C	Capacitor ((KC)1000pF/125V)(200V series)	[C736]
	30	RC-KZ0071PAZZ	AB		C	Capacitor (50WV 0.1μF)(200V series)	[C737]
	31	QPLGZ0457PAZZ	AH		C	Connector (20P-CONNECTOR)	[CN701]
⚠	32	QPLGZ0455PAZZ	AD		C	Connector (3P-CONNECTOR)	[CN702]
	33	QPLGZ0456PAZZ	AF		C	Connector (8P-CONNECTOR)	[CN703]
⚠	34	RC-FZ093DPAZZ	AG		C	Capacitor (XA1201)	[CR701]
	35	VHD1SS270A/-1	AA		B	Diode (1SS270A)	[D703]
	36	VHD1SS270A/-1	AA		B	Diode (1SS270A)	[D704]
	37	VHDERA9102/-1	AC		B	Diode (ERA91-02)	[D706]
	38	VHDESAC92M02/	AH		B	Diode (ESAC92M02)	[D707]
	39	VHDSB80-05J-1	AG		B	Diode (SB80-05J)	[D708]
	40	VHD1SS270A/-1	AA		B	Diode (1SS270A)	[D709]
⚠	41	QFS-C0028PAZZ	AH		A	Fuse (T5A/250V)(200V series)	[FS701]
⚠	42	QFS-F0011PAZZ	AE		A	Fuse (Fuse,10A/125V)(100V series)	[FS701]
⚠	43	QFS-C0028PAZZ	AH		A	Fuse (T5A/250V)(200V series)	[FS702]
⚠	44	QFS-F0011PAZZ	AE		A	Fuse (Fuse,10A/125V)(100V series)	[FS702]
⚠	45	QFS-C0030PAZZ	AF		A	Fuse (Fuse,T2A/250V)(200V series)	[FS703]
⚠	46	QFS-F0006PAZZ	AE		A	Fuse (125V/T4A)(100V series)	[FS703]
	47	RH-iX0783PAZZ	AD		B	IC (L5431)(200V series)	[IC701]
	48	QHiCA4169KAZZ	AM		B	HIC (A4169KA)	[IC702]
	49	QHiCA0003VAZZ	AR		B	HIC	[IC703]
⚠	50	RTRNZ0202PAZZ	AK		B	Line filter (100V series)	[L701]
⚠	51	RTRNZ0394PANA	AH		B	Line filter (200V series)	[L701]
⚠	52	RTRNZ0202PAZZ	AK		B	Line filter (100V series)	[L702]
⚠	53	RTRNZ0394PANA	AH		B	Line filter (200V series)	[L702]
	54	RTRNZ0035PANS	AE		B	Filter-coil (200V series)	[L703]
	55	RTRNZ0400PANT	AD		B	Drum-coil	[L704]
	56	RTRNZ0165PAZZ	AK		B	Choke-coil	[L705]
⚠	57	RTRNZ0423PANN	AL		B	Filter-coil	[L706]
	58	RTRNZ0068PAZZ	AE		B	Ring-coil (100V series)	[L708]
	59	RCORF2004SCZZ	AM		B	AC core	[L709]
	60	RCORF0069PAZZ	AG		B	FG core	[L710]
⚠	61	RH-PX0104PAZZ	AF		B	Photo coupler (PC817B)(100V series)	[PC701]
⚠	62	RH-PX0199PAZZ	AE		B	Photo transistor (PC111)(200V series)	[PC701]
⚠	63	VHRS21ME4F/-1	AH		B	Photo triac (S21ME4F)	[PC703]
	64	VS2SK1016//-1	AQ		B	Transistor (2SK1016)(100V series)	[Q701]
	65	VS2SK1358//-1	AR		B	Transistor (2SK1358)(200V series)	[Q701]
	66	VS2SD1207S/-1	AC		B	Transistor (2SD1207S)(200V series)	[Q704]
	67	VS2SA1451Y/-1	AH		B	Transistor (2SA1451Y)	[Q705]
	68	VS2SA673AC/-1	AE		B	Transistor (2SA673AC)(200V series)	[Q706]
	69	VS2SC4363//-1	AB		B	Transistor (2SC4363)(200V series)	[Q707]
	70	RR-WZ0026PAZZ	AE		C	Resistor (5W-3K(PGBS))(100V series)	[R701]
	71	VRS-FC3AA104J	AA		C	Resistor (1.0W 100KΩ ±5%)	[R702]
	72	VRW-GV3HC100K	AC		C	Resistor (5W 10Ω ±10%)(200V series)	[R703]
	73	VRW-GV3HC220K	AD		C	Resistor (5W 22Ω ±10%)(100V series)	[R703]
	74	RR-FZA3HCR10K	AD		C	Resistor ((FZ)5.0W-0.1K)(100V series)	[R704]
	75	RR-FZA3HCR22K	AD		C	Resistor ((FZ)5.0W-0.22K)(200V series)	[R704]
	76	RR-XZ0047PAZZ	AB		C	Resistor (Fuse,1/6W-1J)	[R717]
	77	RR-XZ0044PAZZ	AB		C	Resistor (Fuse,1/6W-22J)	[R735]
	78	VRS-FC3AA104J	AA		C	Resistor (1.0W 100KΩ ±5%)	[R750]
	79	VHS5P4M////-1	AM		B	Thyristor (5P4M)	[SCR701]
⚠	80	RTRNZ0429PAZZ	AY		B	Power-transformer (100V series)	[T701]
⚠	81	RTRNZ0430PANA	AY		B	Power-transformer (200V series)	[T701]
	82	VHH18D8R0LA-1	AG		B	Thermistor (100V series)	[TH701]
	83	RH-HX0030PAZZ	AE		B	Posistor	[TH702]
	84	RH-SX0010PAZZ	AH		B	Triac (200V series)	[TRC701]
	85	RH-SX0011PAZZ	AH		B	Thyristor (100V series)	[TRC701]
	86	RVR-M0285PAZZ	AC		B	Variable resistor (1KΩ)	[VR701]
	87	RVR-M0285PAZZ	AC		B	Variable resistor (1KΩ)	[VR702]
⚠	88	VHVSN221D10-C	AC		B	Varistor (SNR221KD10)(100V series)	[ZR701]
⚠	89	VHVSN471D10-C	AC		B	Varistor (SN471D-10)(200V series)	[ZR701]
	90	DTiP-0414PAZZ	AC		C	TIP lead wire	
	91	DTiP-0415PAZZ	AD		C	FG lead wire	
	92	DTiP-0416PAZZ	AD		C	TIP lead wire(Brown) (200V series)	
	93	DTiP-0417PAZZ	AD		C	TIP lead wire(Blue) (200V series)	
	94	DTiP-0418PAZZ	AD		C	TIP lead wire(Black) (100V series)	
	95	DTiP-0419PAZZ	AD		C	TIP lead wire(White) (100V series)	
	96	PZETO0061PAZZ	AE		C	Sheet (45TT0220)(200V series)	
	97	PZETO0063PAZZ	AD		C	SI-Sheet (200V series)	
	98	PZETO0064PAZZ	AC		C	SI-Rubber (200V series)	
	99	PZETO0067PAZZ	AC		C	Sheet (200V series)	
	100	PZETO0069PAZZ	AF		C	Sheet (100V series)	
	101	QCNW-0168PAZZ	AD		C	Jumper lead wire(Brown) (200V series)	
	102	QCNW-0169PAZZ	AD		C	Jumper lead wire(Blue) (200V series)	

11 Power supply PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
103	QCNW-0170PAZZ	AC		C	Jumper lead wire(Black) (100V series)
104	QCNW-0171PAZZ	AC		C	Jumper lead wire(White) (100V series)
105	QSŌCA0011PAZZ	AG		B	Inlet
106	QSW-C0032PAZZ	AM		B	Seesaw switch
107	RATTT0002PAZZ	AH		B	Arestor (100V series)
108	RCiLF7872PAZZ	AB		C	Core (200V series)
109	RCŌRF0042PAZZ	AA		C	Core
110	RCŌRF0043PAZZ	AA		C	Core (200V series)
111	RCŌRF0071PAZZ	AB		C	Core
	(Unit)				
901	CPWBF0046GC31	BR		E	Power supply PWB (110V/120V)
	CPWBF0046GC33	BX		E	Power supply PWB (127V)
	CPWBF0046GC32	BS		E	Power supply PWB (200V series)

12 OPU PWB

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCEAPS1EC106M	AC	N	C	Capacitor (25WV 10μF)	[C1]
2	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.1μF)	[C2]
3	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.1μF)	[C3]
4	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.1μF)	[C4]
5	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.1μF)	[C5]
6	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%)	[C6]
7	VCCCTQ1HH101J	AA		C	Capacitor (50WV 100pF)	[C8]
8	QCNCM0044GCZZ	AH		C	Connector (14pin)	[CN401]
9	VHPLT1H51A/-1	AC		B	Photo transistor (LT1H51A)	[D1]
10	VHPLT1K51A/-1	AC		B	Photo transistor (LT1K51A)	[D2]
11	VHPLT1H51A/-1	AC		B	Photo transistor (LT1H51A)	[D3]
12	VHPLT1D51A/-1	AC		B	Photo transistor (LT1D51A)	[D4]
13	VHiHD44780/-1	AS		B	IC (HD44780)	[IC1]
14	VHiSN74LS151N	AG		B	IC (SN74LS151N)	[IC2]
15	VHiSN74LS173N	AL		B	IC (SN74LS173N)	[IC3]
16	VHPGP1S53V/-1	AE		B	Photo transistor (GP1S53V)	[IC4]
17	VRS-TP2BD913J	AA		C	Resistor (1/8W 91KΩ ±5%)	[R1]
18	RMPTQ4332QCJJ	AB		B	Block resistor (3.3KΩ×4)	[R2]
19	VRS-TP2BD122J	AA		C	Resistor (1/8W 1.2KΩ ±5%)	[R4]
20	VRD-RC2EY181J	AA		C	Resistor (1/4W 180Ω ±5%)	[R5]
21	VRS-TP2BD301J	AA		C	Resistor (1/8W 300Ω ±5%)	[R6]
22	VRS-TP2BD201J	AA		C	Resistor (1/8W 200Ω ±5%)	[R7]
23	VRS-TP2BD301J	AA		C	Resistor (1/8W 300Ω ±5%)	[R8]
24	VRS-TP2BD561J	AA		C	Resistor (1/8W 560Ω ±5%)	[R9]
25	DHAi-0060GCZZ	AE		C	Interface harness	
26	LPLTM0147GCZZ	AC		C	Bezel plate	
27	PGUMS0003GCZZ	AH		C	SW rubber	
28	PGUMS0004GCZZ	AC		C	Rubber connector	
29	PGUMS0005GCZZ	AB		C	Rubber spacer	
30	VVLLF7768G/-1	AT		B	LCD (LF7768G)	
	(Unit)					
901	CPWBF0045GC51	BG		E	OPU PWB	

13 JX-96PS1(PS board)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCEAJA1CW226M	AB		C	Capacitor (16WV 22μF)	[C1]
2	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C2]
3	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C3]
4	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C4]
5	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C6]
6	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C7]
7	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C8]
8	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C9]
9	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C10]
10	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C11]
11	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C12]
12	QCNCW0046GCZZ	AQ		C	Connector (60pin)	[CN508]
13	QCNCW0046GCZZ	AQ		C	Connector (60pin)	[CN509]
14	QSŌCZ0051FCZZ	AD		C	IC socket (42pin)	[IC1]
15	VHiLH534U0J-1	AY	N	B	IC (LH534U0J)	[IC1]
16	QSŌCZ0051FCZZ	AD		C	IC socket (42pin)	[IC2]
17	VHiLH534U0K-1	AY	N	B	IC (LH534U0K)	[IC2]
18	QSŌCZ0051FCZZ	AD		C	IC socket (42pin)	[IC3]
19	VHiLH534U0L-1	AY	N	B	IC (LH534U0L)	[IC3]

13 JX-96PS1(PS board)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
20	QSOCZ0051FCZZ	AD		C	IC socket (42pin)	[IC4]
21	VHiLH534U0M-1	AY		B	IC (LH534U0M)	[IC4]
22	VHi74F374SJ-1	AN		B	IC (74F374SJ)	[IC5]
23	VHi74F175SJ-1	AG		B	IC (74F175SJ)	[IC6]
24	VHi74F374SJ-1	AN		B	IC (74F374SJ)	[IC7]
25	VHi74F163SJ-1	AK		B	IC (74F163SJ)	[IC8]
26	VHi74F163SJ-1	AK		B	IC (74F163SJ)	[IC9]
27	VHi74F32SJ／-1	AE		B	IC (74F32SJ)	[IC10]
28	VCCCPU1HH390J	AA		C	Capacitor (50WV 39pF)	
101	SPAKA0218GCZZ	AD		D	Protector sheet (200×200mm)	
102	SPAKC0420GCZZ	AH		D	Packing case	(Other countries)
	SPAKC0422GCZZ	AH		D	Packing case	(SEEG only)
103	TiNSH0114GCZZ	AD		D	Instruction book	
104	UBAGF0007GCZZ	AD		D	Vinyl bag (150W×205Lmm)	

14 JX-96AP1(Apple talk/RS232C board)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCEAJA1CW226M	AB		C	Capacitor (16WV 22µF)	[C1]
2	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C2]
3	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C3]
4	VCCCPU1HH330J	AB		C	Capacitor (50WV 33pF)	[C4]
5	VCCCPU1HH100J	AA		C	Capacitor (50WV 10pF)	[C5]
6	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C6]
7	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C7]
8	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C8]
9	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C9]
10	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C10]
11	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C11]
12	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C12]
13	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C13]
14	QCNCM0027GCZZ	AH		C	Connector (40pin)	[CN1]
15	QCNCW0343FCZZ	AK		C	Connector (25pin)	[CN2]
16	QCNCW0037GCZZ	AK		C	Connector (8pin)	[CN3]
17	RCiLZ1003AC01	AA		C	Coil (BL02RN1-R62)	[FB1]
18	RCiLZ1003AC01	AA		C	Coil (BL02RN1-R62)	[FB2]
19	RCiLZ1003AC01	AA		C	Coil (BL02RN1-R62)	[FB3]
20	RCiLZ1003AC01	AA		C	Coil (BL02RN1-R62)	[FB4]
21	VHiSN74LS32-1	AF		B	IC (SN74LS32)	[IC1]
22	VHiSN74LS04-1	AE		B	IC (SN74LS04)	[IC2]
23	VHiAM26LS32-1	AX		B	IC (AM26LS32)	[IC3]
24	VHiAM26LS31-1	AX		B	IC (AM26LS31)	[IC4]
25	VHiAM85C3016P	BK		B	IC (AM85C3016P)	[IC5]
26	VHiMC145407-1	AU		B	IC (MC145407)	[IC6]
27	VRD-RC2EY105J	AA		C	Resistor (1/4W 1.0MΩ ±5%)	[R1]
28	VRD-RC2EY152J	AA		C	Resistor (1/4W 1.5KΩ ±5%)	[R2]
29	RMPTC8102QCKB	AD		B	Block resistor (1.0KΩ×8 1/8W ±10%)	[RA1]
30	RCRSP0008GCZZ	AH		B	Crystal oscillator (AT49)	[X1]
31	HPNLC0012GCZZ	AF		D	Panel	
32	PCAPH1003ACZZ	AC		C	Connector protect cap (25pin)	(for CN2)
33	QEARP0006GCZZ	AC		C	Earth plate	

15 JX-96RS(RS232C board)--Option

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCEAJA1CW226M	AB		C	Capacitor (16WV 22µF)	[C1]
2	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C7]
3	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C8]
4	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C9]
5	VCEAJA1CW106M	AB		C	Capacitor (16WV 10µF)	[C10]
6	RC-K1E104HCZZ	AB		C	Capacitor (25WV 0.1µF)	[C13]
7	QCNCM0027GCZZ	AH		C	Connector (40pin)	[CN1]
8	QCNCW0343FCZZ	AK		C	Connector (25pin)	[CN2]
9	VHiMC145407-1	AU		B	IC (MC145407)	[IC6]
10	HPNLC0009GCZZ	AF		D	Panel	
11	PCAPH1003ACZZ	AC		C	Connector protect cap (25pin)(for CN2)	

16 JX-96MB1(1M EXM board)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	RC−SZ2008SCZR	A E		C	Capacitor (16WV 22μF)	[C1]
2	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C2]
3	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C3]
4	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C4]
5	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C5]
6	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C6]
7	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C7]
8	QCNCM0024GCZZ	A M		C	Connector (68pin)	[CN1]
9	VHiMC74F244MR	A G		B	IC (MC74F244MR)	[IC1]
10	VHiMC74F244MR	A G		B	IC (MC74F244MR)	[IC2]
11	VHiSN74S08N−1	A G		B	IC (SN74S08N)	[IC3]
12	VHiMC74F139MR	A F		B	IC (MC74F139MR)	[IC4]
13	VHi4M16SOJ−70	B G		B	IC (4M16SOJ−70)	[IC5]
14	VHi4M16SOJ−70	B G		B	IC (4M16SOJ−70)	[IC6]
15	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R1]
16	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R2]
17	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R3]
18	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R4]
19	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R5]
20	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R6]
21	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R9]
22	TLABP5041BCZZ	A B		C	Rom label	
101	SPAKA0218GCZZ	A D		D	Protection sheet (200×200mm)	
102	SPAKC0428GCZZ	A H		D	Packing case	(Other countries)
102	SPAKC0430GCZZ	A H		D	Packing case	(SEEG only)
103	TiNSH0114GCZZ	A D		D	Instruction book	(JX−96XX series)
103	TiNSH0063GCZZ	A E		D	Instruction book	
104	UBAGF0008GCZZ	A C		D	Vinyl bag (100W×125Lmm)	

17 JX-96MD1(2M EXM board)--Option

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	RC−SZ2008SCZR	A E		C	Capacitor (16WV 22μF)	[C1]
2	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C2]
3	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C3]
4	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C4]
5	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C5]
6	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C6]
7	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C7]
8	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C8]
9	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C9]
10	QCNCM0024GCZZ	A M		C	Connector (68pin)	[CN1]
11	VHiMC74F244MR	A G		B	IC (MC74F244MR)	[IC1]
12	VHiMC74F244MR	A G		B	IC (MC74F244MR)	[IC2]
13	VHiSN74S08N−1	A G		B	IC (SN74S08N)	[IC3]
14	VHiMC74F139MR	A F		B	IC (MC74F139MR)	[IC4]
15	VHi4M16SOJ−70	B G		B	IC (4M16SOJ−70)	[IC5]
16	VHi4M16SOJ−70	B G		B	IC (4M16SOJ−70)	[IC6]
17	VHi4M16SOJ−70	B G		B	IC (4M16SOJ−70)	[IC7]
18	VHi4M16SOJ−70	B G		B	IC (4M16SOJ−70)	[IC8]
19	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R1]
20	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R2]
21	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R3]
22	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R4]
23	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R5]
24	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R6]
25	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R8]
26	VRS−TP2BD220J	A A		C	Resistor (1/8W 22Ω ±5%)	[R9]
27	TLABP5041BCZZ	A B		C	ROM label	
101	SPAKA0218GCZZ	A D		D	Protection sheet (200×200mm)	
102	SPAKC0432GCZZ	A H		D	Packing case	(Other countries)
102	SPAKC0434GCZZ	A H		D	Packing case	(SEEG only)
103	TiNSH0114GCZZ	A D		D	Instruction book	
103	TiNSH0063GCZZ	A E		D	Instruction book	
104	UBAGF0008GCZZ	A C		D	Vinyl bag	

18 JX-96MH1(4M EXM board)--Option

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	RC−SZ2008SCZR	A E		C	Capacitor (16WV 22μF)	[C1]
2	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C2]
3	VCKYTQ1HF104Z	A A		C	Capacitor (50WV 0.10μF)	[C3]

18 JX-96MH1(4M EXM board)--Option

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
4	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C4]
5	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C5]
6	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C6]
7	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C7]
8	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C8]
9	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C9]
10	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C10]
11	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C11]
12	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C12]
13	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF) [C13]
14	QCNCM0024GCZZ	AM		C	Connector (68pin) [CN1]
15	VHiMC74F244MR	AG		B	IC (MC74F244MR) [IC1]
16	VHiMC74F244MR	AG		B	IC (MC74F244MR) [IC2]
17	VHiSN74S08N-1	AG		B	IC (SN74S08N) [IC3]
18	VHiMC74F139MR	AF		B	IC (MC74F139MF) [IC4]
19	VHi4M16SOJ-70	BG		B	IC (4M16SOJ-70) [IC5]
20	VHi4M16SOJ-70	BG		B	IC (4M16SOJ-70) [IC6]
21	VHi4M16SOJ-70	BG		B	IC (4M16SOJ-70) [IC7]
22	VHi4M16SOJ-70	BG		B	IC (4M16SOJ-70) [IC8]
23	VHi4M16TSOP70	BK		B	IC (4M16TSOP70) [IC9]
24	VHi4M16TSOP70	BK		B	IC (4M16TSOP70) [IC10]
25	VHi4M16TSOP70	BK		B	IC (4M16TSOP70) [IC11]
26	VHi4M16TSOP70	BK		B	IC (4M16TSOP70) [IC12]
27	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R1]
28	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R2]
29	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R3]
30	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R4]
31	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R5]
32	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R6]
33	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R7]
34	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R8]
35	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R9]
36	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%) [R10]
37	TLABP5041BCZZ	AB		C	ROM label
101	SPAKA0218GCZZ	AD		D	Protection sheet (200×200mm)
102	SPAKC0436GCZZ	AH		D	Packing case (Other countries)
102	SPAKC0438GCZZ	AH		D	Packing case (SEEG only)
103	TiNSH0114GCZZ	AD		D	Instruction book (JX-96XX series)
103	TiNSH0063GCZZ	AE		D	Instruction book
104	UBAGF0008GCZZ	AC		D	Vinyl bag (100W×125Lmm)

■ Index

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
[C]					
CCAB-0030GC03	1- 7	BC		D	
CCAB-0031GC08	1- 1	AX	N	D	
CCAB-0031GC09	1- 1	AX	N	D	
CCLEZ0014GC01	6- 105	AM		C	
CFRM-0021GC31	2- 1	AZ		E	
CFRM-0022GC51	2- 68	BN		E	
CGiDM0033GC02	2- 14	AT	N	C	
CHLDZ0015GC01	6- 2	AK		C	
CPLTM0118GC02	2- 63	AH		C	
CPLTM0135GC01	4- 68	AM		C	
CPWBF0045GC51	1- 4	BG		E	
〃	12- 901	BG		E	
CPWBF0046GC31	3- 35	BR		E	
〃	11- 901	BR		E	
CPWBF0046GC32	3- 35	BS		E	
〃	11- 901	BS		E	
CPWBF0046GC33	3- 35	BX		E	
〃	11- 901	BX		E	
CPWBF0047GC37	3- 34	BQ		E	
CPWBF0048GC31	2- 13	AK		E	
CPWBF0049GC59	2- 6	BQ		E	
〃	9- 901	BQ		E	
CPWBF0050GC71	2- 50	BB		E	
〃	7- 901	BB		E	
CPWBF0051GC51	2- 61	BD		E	
〃	8- 901	BD		E	
CPWBF0054GC51	2- 10	AK		E	
CPWBX0064GC51	3- 501	CT	N	E	
〃	10- 901	CT	N	E	
CPWBX0064GC53	3- 501	CT	N	E	
〃	10- 901	CT	N	E	
CPWBX0064GC55	3- 501	CQ	N	E	
〃	10- 901	CQ	N	E	
CPWBX0064GC57	3- 501	CP	N	E	
〃	10- 901	CP	N	E	
CPWBX0064GC59	3- 501	CQ	N	E	
〃	10- 901	CQ	N	E	
CSOU-0005GC01	6- 10	AK		C	
CTHM-0011FC01	4- 56	AK		B	
CWiR-0001GC01	4- 90	AH		C	
[D]					
DHAi-0043GCZZ	2- 72	AC		C	
〃	4- 51	AC		C	
DHAi-0046GCZZ	7- 20	AF		C	
DHAi-0047GCZZ	8- 3	AG		C	
DHAi-0048GCZZ	7- 21	AE		C	
DHAi-0050GCZZ	8- 28	AL		C	
DHAi-0055GCZZ	3- 27	AE		C	
DHAi-0060GCZZ	12- 25	AE		C	
DTiP-0414PAZZ	11- 90	AC		C	
DTiP-0415PAZZ	11- 91	AD		C	
DTiP-0416PAZZ	11- 92	AD		C	
DTiP-0417PAZZ	11- 93	AD		C	
DTiP-0418PAZZ	11- 94	AD		C	
DTiP-0419PAZZ	11- 95	AD		C	
DUNT-0056GC12	2- 8	CA		E	
DUNT-0057GC13	4- 901	BW		E	
DUNT-0057GC14	4- 901	BX		E	
DUNT-0057GC15	4- 901	BX		E	
DUNT-0075GCZZ	4- 93	AN		E	
[G]					
GCASP0007GCA2	5- 10	AV		D	
GCASP0007GCL2	5- 10	AS		D	
GLEGG0002GCZZ	1- 14	AB		C	
GNET-0001GCZZ	3- 37	AK		C	
[H]					
HPNLC0009GCZZ	15- 10	AF		D	
HPNLC0011GCZ1	10- 170	AG		C	
HPNLC0012GCZZ	14- 31	AF		D	
HPNLC0013GCZZ	10- 171	AL		C	
HPNLC0014GCZZ	1- 3	AE		D	
[J]					
JBTN-0002GCZ1	1- 8	AC		C	
〃	1- 15	AC		C	
JKNBZ0003GCZZ	3- 30	AD		C	
[L]					
LANGF0012GCZZ	4- 82	AB		C	
LBNDJ2003SCZZ	2- 90	AA		C	
〃	4- 78	AA		C	
LBOSZ0051GCZZ	2- 73	AC		C	
LBOSZ1031FCZZ	2- 34	AC		C	
LFRM-0026GCZZ	4- 34	AY		C	
LHLDZ0013GCZZ	2- 42	AD		C	
LHLDZ0014GCZZ	4- 52	AE		C	
LHLDZ0016GCZZ	4- 59	AP		C	
LHLDZ0023GCZZ	4- 21	AC		C	
LPiNS0008GCZ1	4- 66	AB		C	
LPLTM0104GCZZ	2- 5	AR		C	
LPLTM0105GCZZ	3- 33	AM		C	
LPLTM0106GCZZ	2- 56	AC		C	
LPLTM0107GCZZ	2- 58	AE		C	
LPLTM0109GCZZ	4- 46	AM		C	
LPLTM0110GCZ1	5- 3	AP		C	
LPLTM0111GCZ1	5- 3	AP		C	
LPLTM0112GCZZ	2- 12	AD		C	
LPLTM0127GCZZ	2- 9	AB		C	
LPLTM0134GCZ1	4- 72	AG		C	
LPLTM0137GCZZ	10- 172	AC		C	
LPLTM0138GCZZ	5- 14	AC		C	
LPLTM0139GCZZ	3- 40	AB		C	
LPLTM0147GCZZ	12- 26	AC		C	
LPLTM0155GCZZ	3- 54	AF	N	C	
LSTPF0007GCZZ	4- 42	AA		C	
LSTPP0006GCZZ	3- 11	AE		C	
LSTPP0008GCZZ	5- 9	AC		C	
LSTPP0009GCZZ	6- 106	AC		C	
LX-BZ0016GCZZ	3- 29	AB		C	
〃	10- 173	AB		C	
LX-BZ0019GCZZ	3- 16	AB	N	C	
LX-WZ2012SCZZ	2- 65	AA		C	
[M]					
MARMP0008GCZZ	3- 21	AE		C	
MARMP0009GCZZ	4- 87	AC		C	
MARMP0010GCZZ	4- 89	AB		C	
MARMP0011GCZZ	4- 30	AE		C	
MLEVF0036GCZZ	2- 46	AC		C	
MLEVP0028GCZZ	2- 43	AF		C	
MLEVP0029GCZZ	1- 11	AD		C	
〃	2- 2	AD		C	
MLEVP0030GCZZ	2- 60	AD		C	
MLEVP0031GCZZ	2- 36	AC		C	
MLEVP0032GCZZ	2- 47	AD		C	
MLEVP0033GCZZ	3- 3	AC		C	
MLEVP0034GCZZ	3- 1	AC		C	
MLEVP0035GCZZ	4- 35	AD		C	
MSPRB0107GCZZ	2- 84	AB		C	
MSPRC0068GCZZ	2- 59	AA		C	
MSPRC0070GCZZ	2- 38	AB		C	
MSPRC0071GCZZ	2- 45	AA		C	
MSPRC0074GCZZ	2- 21	AA		C	
MSPRC0086GCZ1	4- 37	AA		C	
MSPRC0105GCZZ	2- 32	AD		C	
MSPRC0110GCZZ	5- 5	AC		C	
MSPRC0111GCZZ	4- 37	AB		C	
MSPRC0116GCZZ	4- 91	AB		C	
MSPRC0118GCZZ	4- 17	AA		C	
MSPRC0121GCZZ	4- 25	AA		C	
MSPRC0123GCZZ	3- 26	AB		C	
MSPRC0124GCZZ	4- 24	AB		C	
MSPRC0125GCZZ	4- 85	AC		C	
MSPRP0083GCZZ	4- 2	AC		C	
MSPRP0085GCZZ	4- 4	AD		C	
MSPRP0087GCZZ	4- 5	AC		C	
MSPRP0088GCZZ	5- 8	AB		C	
MSPRP0099GCZZ	4- 6	AD		C	
MSPRP0109GCZZ	4- 47	AC		C	
MSPRT0069GCZZ	2- 37	AA		C	
MSPRT0072GCZZ	2- 15	AA		C	
MSPRT0075GCZZ	3- 28	AB		C	
MSPRT0077GCZZ	1- 10	AB		C	
〃	2- 3	AB		C	
MSPRT0082GCZZ	4- 58	AA		C	
MSPRT0084GCZZ	4- 9	AA		C	
MSPRT0108GCZZ	4- 70	AA		C	
MSPRT0117GCZZ	4- 86	AA		C	
MSPRT0119GCZZ	4- 27	AA		C	
MSPRT0120GCZZ	4- 14	AC		C	
MSPRT0127GCZZ	3- 5	AB		C	
MSPRT0128GCZZ	5- 7	AB		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
MSPRT0129GCZZ	5- 15	A B		C	
MSPRT0130GCZZ	3- 13	A B		C	
【N】					
NBRGC0016GCZZ	4- 43	A F		C	
NBRGC0017GCZZ	4- 38	A D		C	
NBRGC0029GCZZ	4- 77	A K		C	
NBRGC0030GCZZ	2- 18	A B		C	
NBRGC0343FCZZ	2- 23	A B		C	
NBRGP0013GCZZ	2- 29	A D		C	
NGERH0036GCZZ	2- 30	A B		C	
NGERH0037GCZZ	2- 31	A G		C	
NGERH0038GCZZ	2- 40	A C		C	
NGERH0039GCZZ	2- 35	A G		C	
NGERH0040GCZZ	2- 39	A C		C	
NGERH0041GCZZ	3- 24	A B		C	
NGERH0042GCZZ	3- 23	A C		C	
NGERH0043GCZZ	3- 22	A C		C	
NGERH0044GCZZ	2- 66	A G		C	
NGERH0045GCZZ	2- 67	A D		C	
NGERH0046GCZZ	2- 53	A G		C	
NGERH0047GCZZ	2- 54	A D		C	
NGERH0049GCZZ	4- 36	A D		C	
NGERH0050GCZZ	4- 31	A C		C	
NGERH0051GCZZ	4- 41	A C		C	
NGERH0052GCZZ	4- 63	A C		C	
NGERH0065GCZZ	4- 62	A C		C	
NGERH0066GCZZ	4- 32	A C		C	
NROLM0035GCZZ	4- 40	A X		C	
NROLP0037GCZZ	4- 1	A B		C	
NROLP0038GCZA	4- 61	A R		C	
NROLP0039GCZZ	5- 6	A C		C	
NROLP0046GCZ1	2- 20	A P		C	
NROLP0048GCZZ	4- 67	A C		C	
NROLR0031GCZZ	2- 25	A R		C	
NROLR0032GCZ1	2- 26	A P		C	
NROLR0036GCZZ	4- 39	A W		C	
NROLR0051GCZZ	4- 12	A M		C	
NSFTZ0039GCZZ	4- 23	A F		C	
NSFTZ0044GCZZ	4- 10	A F		C	
NSFTZ0045GCZZ	4- 71	A C		C	
NSFTZ0047GCZZ	4- 26	A E		C	
【P】					
PBRSS0005GCZZ	2- 91	A D	N	C	
PCAPH1001ACZZ	3- 51	A E		C	
PCAPH1003ACZZ	14- 32	A C		C	
〃	15- 11	A C		C	
PCASZ0011GCZ1	1- 16	B A		D	
PCASZ0015GCZ3	3- 9	A K		C	
PCASZ0017GCZ1	3- 42	A G		C	
PCASZ0018GCZZ	4- 83	A E		C	
PCLC-0006GCZ1	2- 41	A X		C	
PCLR-0006GCZZ	4- 13	A B		C	
PCOVP0024GCZ1	4- 8	A N		C	
PCOVP0025GCZZ	1- 12	A D		C	
PCOVP0028GCZZ	1- 2	A G		D	
PCOVP0033GCZ1	6- 9	A H		C	
PCOVQ0031GCZ1	4- 48	A H		C	
PFiLZ0006GCZZ	3- 43	A G		C	
PGiDH0032GCZZ	2- 16	A H		C	
PGiDH0044GCZZ	4- 20	A G		C	
PGiDM0035GCZZ	4- 7	A N		C	
PGiDM0038GCZZ	6- 3	A H		D	
PGiDM0039GCZZ	6- 4	A D		D	
PGiDM0040GCZZ	10- 174	A G		C	
PGiDM0042GCZZ	2- 51	A C		C	
PGiDM0043GCZZ	4- 88	A E		C	
PGUMS0003GCZZ	12- 27	A H		C	
PGUMS0004GCZZ	12- 28	A C		C	
PGUMS0005GCZZ	12- 29	A B		C	
PHOG-1023CCZZ	6- 1	A B		C	
PMLT-0026GCZZ	2- 83	A A		C	
PMLT-0028GCZZ	2- 79	A A		C	
PMLT-0029GCZZ	2- 80	A A		C	
PMLT-0030GCZZ	1- 23	A B		C	
PMLT-0032GCZZ	5- 17	A B		C	
PMLT-0034GCZZ	5- 18	A B		C	
PMLT-0035GCZZ	5- 16	A B		C	
PPiPP0001GCZ1	2- 33	A C		C	
PRNGP0019FCZZ	2- 89	A A		C	
PRNGP0025FCZZ	3- 20	A A		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
PRNGP0026FCZZ	2- 44	A A		C	
PRNGP0033FCZZ	3- 2	A A		C	
PSHEG0093GCZZ	3- 46	A D		C	
PSHEP0074GCZZ	2- 27	A B		C	
PSHEP0078GCZZ	2- 82	A A		C	
PSHEP0081GCZZ	2- 75	A E		C	
PSHEP0082GCZZ	2- 78	A D		C	
PSHEP0083GCZZ	2- 77	A D		C	
PSHEP0086GCZZ	3- 44	A C		C	
PSHEP0100GCZZ	4- 74	A F		C	
PSHEP0101GCZZ	2- 87	A C		C	
PSHEP0102GCZZ	2- 88	A B		C	
PSHEP0105GCZZ	10- 175	A C		C	
PSHEP0107GCZZ	2- 74	A F	N	C	
PSHEZ1606FCZZ	5- 2	A B		C	
PSHT-0006GCZ1	3- 4	A D		C	
PSPAZ0009GCZZ	2- 64	A A		C	
PSPAZ0018GCZZ	3- 48	A D		C	
PTME-0007GCZZ	4- 57	A E		C	
PTME-0008GCZZ	5- 4	A D		C	
PTME-0009GCZZ	5- 1	A D		C	
PTPE-0006GCZ1	3- 39	A E		C	
PTPE-0008GCZZ	2- 86	A C		C	
PZETO0061PAZZ	11- 96	A E		C	
PZETO0063PAZZ	11- 97	A D		C	
PZETO0064PAZZ	11- 98	A C		C	
PZETO0067PAZZ	11- 99	A C		C	
PZETO0069PAZZ	11- 100	A F		C	
【Q】					
QACCB7521QCZZ	6- 1	A S		B	
QACCB7620QCN1	6- 1	A X		B	
QACCB7622QCZZ	6- 1	B A		B	
QACCD6611QCN2	6- 1	A X		B	
QACCD7613QCN5	6- 1	A Q		B	
QACCF7620QCZZ	6- 1	A X		B	
QACCJ9610QCZZ	6- 1	A R		B	
QACCL7620QCZZ	6- 1	A W		B	
QACCV6621QCN1	6- 1	A U		B	
〃	6- 1	A U		B	
〃	6- 1	A U		B	
QCNCM0024GCZZ	16- 8	A M		C	
〃	17- 10	A M		C	
〃	18- 14	A M		C	
QCNCM0027GCZZ	14- 14	A H		C	
〃	15- 7	A H		C	
QCNCM0032GCZZ	9- 30	A H		C	
QCNCM0033GCZZ	8- 4	A C		C	
QCNCM0034GCZZ	8- 5	A C		C	
〃	8- 6	A C		C	
QCNCM0035GCZZ	7- 7	A H		C	
〃	7- 8	A H		C	
QCNCM0044GCZZ	12- 8	A H		C	
QCNCM0045GCZZ	10- 73	A M		C	
〃	10- 74	A M		C	
QCNCM0688FCZZ	10- 64	A R		C	
QCNCM1005MCZZ	9- 31	A B		B	
QCNCM2334SC0B	9- 32	A B		B	
QCNCW0020GCZZ	10- 71	A H		C	
QCNCW0021GCZZ	10- 65	A M		C	
〃	10- 67	A M		C	
QCNCW0028GCZZ	9- 27	A E		C	
QCNCW0029GCZZ	9- 28	A D		C	
QCNCW0036GCZZ	9- 29	A B		C	
QCNCW0037GCZZ	14- 16	A K		C	
QCNCW0040GCZZ	10- 70	A K		C	
QCNCW0041GCZZ	10- 72	A H		C	
QCNCW0042GCZZ	10- 66	A M		C	
〃	10- 68	A M		C	
QCNCW0046GCZZ	13- 12	A Q		C	
〃	13- 13	A Q		C	
QCNCW0341FCZZ	10- 69	A G		C	
QCNCW0343FCZZ	14- 15	A K		C	
〃	15- 8	A K		C	
QCNCW0535FCZZ	7- 9	A B		C	
QCNW-0122FCZZ	6- 1	A R		B	
QCNW-0132FCZZ	6- 1	A V		B	
QCNW-0168PAZZ	11- 101	A D		C	
QCNW-0169PAZZ	11- 102	A D		C	
QCNW-0170PAZZ	11- 103	A C		C	
QCNW-0171PAZZ	11- 104	A C		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
QEARP0006GCZZ	14- 33	A C		C	
QEARP0011GCZZ	3- 38	A K	N	C	
QFS-C0028PAZZ	11- 41	A H		A	
〃	11- 43	A H		A	
QFS-C0030PAZZ	11- 45	A F		A	
QFS-F0006PAZZ	11- 46	A E		A	
QFS-F0011PAZZ	11- 42	A E		A	
〃	11- 44	A E		A	
QHiCA0003VAZZ	11- 49	A R		B	
QHiCA4169KAZZ	11- 48	A M		B	
QPLGA0001QCZZ	6- 1	A N		C	
QPLGA0002QCZZ	6- 1	A N		C	
QPLGA4171CCZZ	6- 1	A N		C	
QPLGZ0455PAZZ	11- 32	A D		C	
QPLGZ0456PAZZ	11- 33	A F		C	
QPLGZ0457PAZZ	11- 31	A H		C	
QSLP-0013GCZZ	3- 19	A E		C	
QSLP-0014GCZZ	3- 18	A G		C	
QSLP-0015GCZZ	3- 17	A F		C	
QSLP-0024GCZZ	3- 14	A B		C	
QSLP-0025GCZZ	4- 65	A F		C	
QSOCA0011PAZZ	11- 105	A G		B	
QSOCZ0002GCZZ	10- 83	A D		C	
QSOCZ0051FCZZ	13- 14	A D		C	
〃	13- 16	A D		C	
〃	13- 18	A D		C	
〃	13- 20	A D		C	
QSW-C0032PAZZ	11- 106	A M		B	
QSW-M0017GCZZ	2- 48	A G		B	
QSW-P0006GCZZ	8- 7	A B		B	
〃	8- 8	A B		B	
〃	8- 9	A B		B	
〃	8- 10	A B		B	
〃	8- 11	A B		B	
〃	8- 12	A B		B	
QTANP0096FCZZ	6- 1	A A		C	
[R]					
RALMB5006SCZZ	9- 1	A D		B	
RATTT0002PAZZ	11- 107	A H		B	
RC-EZ0305PAZZ	11- 11	A N		C	
RC-EZ0306PAZZ	11- 12	A M		C	
RC-EZ0319PAZZ	11- 14	A D		C	
RC-EZ0320PAZZ	11- 28	A C		C	
RC-FZ083DPAZZ	11- 18	A D		C	
RC-FZ084DPAZZ	11- 3	A E		C	
〃	11- 4	A E		C	
RC-FZ085DPAZZ	11- 19	A F		C	
RC-FZ093DPAZZ	11- 34	A G		C	
RC-KZ003DPAZZ	11- 5	A C		C	
〃	11- 6	A C		C	
RC-KZ0032PAZZ	11- 15	A B		C	
RC-KZ004DPAZZ	11- 25	A D		C	
RC-KZ0064PAZZ	11- 13	A B		C	
RC-KZ0071PAZZ	11- 30	A B		C	
RC-K1E104HCZZ	8- 2	A B		C	
〃	14- 2	A B		C	
〃	14- 3	A B		C	
〃	14- 6	A B		C	
〃	14- 11	A B		C	
〃	14- 12	A B		C	
〃	14- 13	A B		C	
〃	15- 6	A B		C	
RC-QZA102AFYK	11- 26	A A		C	
RC-QZS104AFYK	11- 16	A B		C	
〃	11- 23	A B		C	
RC-QZ0044PAZZ	11- 7	A C		C	
RC-QZ0045PAZZ	11- 8	A B		C	
〃	11- 29	A B		C	
RC-QZ0047PAZZ	11- 9	A C		C	
RC-QZ0048PAZZ	11- 10	A C		C	
〃	11- 27	A C		C	
RC-SZ2008SCZR	16- 1	A E		C	
〃	17- 1	A E		C	
〃	18- 1	A E		C	
RCiLC5014NCZZ	10- 125	A G		C	
RCiLF7872PAZZ	11- 108	A B		C	
RCiLZ1003AC01	14- 17	A A		C	
〃	14- 18	A A		C	
〃	14- 19	A A		C	
〃	14- 20	A A		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
RCORF0003GCZZ	10- 2	A H		C	
RCORF0042PAZZ	11- 109	A A		C	
RCORF0043PAZZ	11- 110	A A		C	
RCORF0069PAZZ	11- 60	A G		B	
RCORF0071PAZZ	11- 111	A B		C	
RCORF1005ACZZ	10- 1	A B		C	
〃	10- 10	A B		C	
〃	10- 11	A B		C	
RCORF1009ACZZ	10- 3	A C		C	
〃	10- 4	A C		C	
〃	10- 6	A C		C	
〃	10- 7	A C		C	
〃	10- 8	A C		C	
〃	10- 12	A C		C	
RCORF2004SCZZ	11- 59	A M		B	
RCRSP0008GCZZ	14- 30	A H		B	
RCRSQ2052HCZZ	9- 95	A H		B	
RCRSZ0013GCZZ	10- 167	A Q	N	B	
RCRSZ0014GCZZ	10- 168	A R		B	
RCRSZ1009HCZZ	10- 169	A R		B	
RDTCF0013GCZZ	2- 24	A M		B	
RDTCT0011GCZZ	4- 54	A Q		B	
RH-HX0030PAZZ	11- 83	A E		B	
RH-iX0783PAZZ	11- 47	A D		B	
RH-PX0104PAZZ	11- 61	A F		B	
RH-PX0199PAZZ	11- 62	A E		B	
RH-SX0010PAZZ	11- 84	A H		B	
RH-SX0011PAZZ	11- 85	A H		B	
RLMPU0005GCZZ	4- 11	A W		B	
RLMPU0006GCZZ	4- 11	A W		B	
RLMPU0007GCZZ	4- 11	A Y		B	
RMOTN0011GCZZ	3- 25	A T		B	
RMOTN0012GCZZ	3- 32	A X		B	
RMPTC4103QCJB	9- 94	A D		B	
RMPTC4202QCJB	9- 93	A A		B	
RMPTC8102QCKB	14- 29	A D		B	
RMPTC8103QCKB	10- 164	A D		B	
RMPTC8222QCKB	10- 165	A D		B	
〃	10- 166	A D		B	
RMPTQ4332QCJJ	12- 18	A B		B	
RPLU-0001GCZZ	8- 16	A M		B	
〃	8- 17	A M		B	
RR-FZA3HCR10K	11- 74	A D		C	
RR-FZA3HCR22K	11- 75	A D		C	
RR-WZ0026PAZZ	11- 70	A E		C	
RR-XZ0044PAZZ	11- 77	A B		C	
RR-XZ0047PAZZ	11- 76	A B		C	
RTRNZ0035PANS	11- 54	A E		B	
RTRNZ0068PAZZ	11- 58	A E		B	
RTRNZ0165PAZZ	11- 56	A K		B	
RTRNZ0202PAZZ	11- 50	A K		B	
〃	11- 52	A K		B	
RTRNZ0394PANA	11- 51	A H		B	
〃	11- 53	A H		B	
RTRNZ0400PANT	11- 55	A D		B	
RTRNZ0423PANN	11- 57	A L		B	
RTRNZ0429PAZZ	11- 80	A Y		B	
RTRNZ0430PANA	11- 81	A Y		B	
RVR-M0285PAZZ	11- 86	A C		B	
〃	11- 87	A C		B	
[S]					
SPAKA0218GCZZ	13- 101	A D		D	
〃	16- 101	A D		D	
〃	17- 101	A D		D	
〃	18- 101	A D		D	
SPAKA0221GCZZ	6- 6	A R		D	
SPAKA0222GCZZ	6- 7	A R		D	
SPAKA0278GCZZ	6- 13	A D		D	
SPAKA0280GCZZ	6- 11	A H		D	
SPAKC0414GCZZ	6- 8	A W	N	D	
SPAKC0415GCZZ	6- 8	A X	N	D	
SPAKC0417GCZZ	6- 8	A W	N	D	
SPAKC0418GCZZ	6- 8	A X	N	D	
SPAKC0420GCZZ	13- 102	A H		D	
SPAKC0422GCZZ	13- 102	A H		D	
SPAKC0428GCZZ	16- 102	A H		D	
SPAKC0430GCZZ	16- 102	A H		D	
SPAKC0432GCZZ	17- 102	A H		D	
SPAKC0434GCZZ	17- 102	A H		D	
SPAKC0436GCZZ	18- 102	A H		D	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
SPAKC0438GCZZ	18- 102	A H		D	
SSAKA0005WCZZ	6- 112	A A		D	
SSAKA3001CCZZ	6- 101	A A		D	
SSAKA3340QCZZ	6- 102	A B		D	
[T]					
TCADE0014GCZZ	6- 110	A D		D	
TCADZ0015GCZZ	6- 109	A D		D	
TCADZ0028GCZZ	6- 111	A F		D	
TCADZ0036GCZZ	6- 113	A C		D	
TCADZ0037GCZZ	6- 118	A D	N	D	
TCADZ0038GCZZ	6- 114	A E		D	
TCADZ0041GCZZ	6- 115	A E		D	
TCADZ2001QCZA	6- 107	A E		D	
TGANE1001CSZZ	6- 108	A C		D	
TGANE1001QCZA	6- 108	A C		D	
TiNSE0106GCZZ	6- 5	A W	N	D	
TiNSE0107GCZZ	6- 5	A W	N	D	
TiNSF0109GCZZ	6- 5	A W	N	D	
TiNSG0108GCZZ	6- 5	A W	N	D	
TiNSH0063GCZZ	16- 103	A E		D	
〃	17- 103	A E		D	
〃	18- 103	A E		D	
TiNSH0113GCZZ	6- 5	A W	N	D	
TiNSH0114GCZZ	13- 103	A D		D	
〃	16- 103	A D		D	
〃	17- 103	A D		D	
〃	18- 103	A D		D	
TiNSi0112GCZZ	6- 5	A W	N	D	
TiNSS0110GCZZ	6- 5	A W	N	D	
TiNSZ0111GCZZ	6- 5	A W	N	D	
TLABH0096GCZZ	5- 12	A D		C	
TLABH0128GCZZ	4- 80	A C		D	
TLABH2597FCZZ	1- 19	A C		C	
TLABP5041BCZZ	16- 22	A B		C	
〃	17- 27	A B		C	
〃	18- 37	A B		C	
TLABT0001QCZZ	1- 21	A A		C	
TLABZ0095GCZZ	5- 13	A C		C	
TLABZ0098GCZZ	5- 13	A C		C	
TLABZ0127GCZZ	4- 75	A B		C	
TLABZ0176GCZZ	5- 11	A C		D	
[U]					
UBAGF0007GCZZ	13- 104	A D		D	
UBAGF0008GCZZ	16- 104	A C		D	
〃	17- 104	A C		D	
〃	18- 104	A C		D	
UBAGF0018FCZZ	6- 103	A E		D	
UFLPB0009GCZZ	6- 119	A Q	N	D	
UFLPB0010GCZZ	6- 117	A S		D	
UFLPB0012GCZZ	6- 116	A Q		D	
[V]					
VCCCPU1HH100J	14- 5	A A		C	
VCCCPU1HH330J	14- 4	A B		C	
VCCCPU1HH390J	13- 28	A A		C	
VCCCTQ1HH101J	12- 7	A A		C	
VCCCTV1HH101J	10- 26	A A		C	
〃	10- 46	A A		C	
〃	10- 48	A A		C	
〃	10- 51	A A		C	
〃	10- 62	A A		C	
VCCCTV1HH120J	10- 38	A A		C	
VCCCTV1HH180J	9- 13	A A		C	
〃	9- 14	A A		C	
VCCCTV1HH271J	10- 30	A A		C	
〃	10- 36	A A		C	
VCCCTV1HH330J	10- 34	A A		C	
〃	10- 45	A A		C	
〃	10- 47	A A		C	
〃	10- 53	A A		C	
VCCCTV1HH390J	10- 42	A A		C	
〃	10- 60	A A		C	
VCCCTV1HH470J	10- 41	A A		C	
〃	10- 54	A A		C	
VCCCTV1HH471J	9- 24	A A		C	
〃	9- 25	A A		C	
VCCSPA1H6101J	11- 22	A A		C	
VCEAEA1AW476M	8- 1	A B		C	
〃	9- 2	A B		C	
〃	9- 4	A B		C	
VCEAEA1HW106M	7- 4	A A		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VCEAEA1HW106M	9- 3	A A		C	
VCEAJA1CW106M	10- 15	A B		C	
〃	10- 17	A B		C	
〃	14- 7	A B		C	
〃	14- 8	A B		C	
〃	14- 9	A B		C	
〃	14- 10	A B		C	
〃	15- 2	A B		C	
〃	15- 3	A B		C	
〃	15- 4	A B		C	
〃	15- 5	A B		C	
VCEAJA1CW226M	10- 14	A B		C	
〃	10- 16	A B		C	
〃	10- 18	A B		C	
〃	10- 19	A B		C	
〃	13- 1	A B		C	
〃	14- 1	A B		C	
〃	15- 1	A B		C	
VCEAPS1EC106M	12- 1	A C	N	C	
VCEA1S1HM105M	11- 17	A B		C	
VCEA1S1VM108M	11- 20	A E		C	
〃	11- 21	A E		C	
〃	11- 24	A E		C	
VCKYPU1HB101K	10- 176	A A		C	
VCKYPU1HB222K	7- 2	A A		C	
〃	7- 3	A A		C	
VCKYPU1HB471K	7- 1	A A		C	
〃	7- 5	A A		C	
VCKYTQ1HB392K	10- 32	A B		C	
〃	10- 37	A B		C	
VCKYTQ1HF104Z	10- 24	A A		C	
〃	10- 25	A A		C	
〃	10- 27	A A		C	
〃	10- 29	A A		C	
〃	10- 31	A A		C	
〃	10- 33	A A		C	
〃	10- 35	A A		C	
〃	10- 40	A A		C	
〃	10- 43	A A		C	
〃	10- 44	A A		C	
〃	10- 49	A A		C	
〃	10- 50	A A		C	
〃	10- 52	A A		C	
〃	10- 55	A A		C	
〃	10- 56	A A		C	
〃	10- 59	A A		C	
〃	10- 61	A A		C	
〃	10- 63	A A		C	
〃	12- 2	A A		C	
〃	12- 3	A A		C	
〃	12- 4	A A		C	
〃	12- 5	A A		C	
〃	13- 2	A A		C	
〃	13- 3	A A		C	
〃	13- 4	A A		C	
〃	13- 5	A A		C	
〃	13- 6	A A		C	
〃	13- 7	A A		C	
〃	13- 8	A A		C	
〃	13- 9	A A		C	
〃	13- 10	A A		C	
〃	13- 11	A A		C	
〃	16- 2	A A		C	
〃	16- 3	A A		C	
〃	16- 4	A A		C	
〃	16- 5	A A		C	
〃	16- 6	A A		C	
〃	16- 7	A A		C	
〃	17- 2	A A		C	
〃	17- 3	A A		C	
〃	17- 4	A A		C	
〃	17- 5	A A		C	
〃	17- 6	A A		C	
〃	17- 7	A A		C	
〃	17- 8	A A		C	
〃	17- 9	A A		C	
〃	18- 2	A A		C	
〃	18- 3	A A		C	
〃	18- 4	A A		C	
〃	18- 5	A A		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VHPLT1K51A/-1	12- 10	A C		B	
VHRS21ME4F/-1	11- 63	A H		B	
VHS5P4M////-1	11- 79	A M		B	
VHViCPN20//-1	9- 46	A D		B	
VHViCPN50//-1	7- 11	A E		B	
VHVSN221D10-C	11- 88	A C		B	
VHVSN471D10-C	11- 89	A C		B	
VRD-RB2HY101J	10- 127	A A		C	
VRD-RB2HY120J	10- 126	A A		C	
VRD-RC2EY100J	9- 51	A A		C	
"	9- 52	A A		C	
"	9- 62	A A		C	
VRD-RC2EY102J	9- 47	A A		C	
"	9- 49	A A		C	
VRD-RC2EY103J	8- 20	A A		C	
"	8- 21	A A		C	
"	8- 22	A A		C	
"	8- 23	A A		C	
"	8- 24	A A		C	
"	8- 25	A A		C	
"	9- 55	A A		C	
"	9- 66	A A		C	
"	9- 67	A A		C	
"	9- 68	A A		C	
"	9- 69	A A		C	
"	9- 71	A A		C	
"	9- 73	A A		C	
"	9- 74	A A		C	
"	9- 76	A A		C	
"	9- 79	A A		C	
VRD-RC2EY105J	9- 64	A A		C	
"	14- 27	A A		C	
VRD-RC2EY121J	7- 19	A A		C	
"	8- 18	A A		C	
VRD-RC2EY152J	14- 28	A A		C	
VRD-RC2EY165J	9- 61	A A		C	
VRD-RC2EY181J	8- 27	A A		C	
"	12- 20	A A		C	
VRD-RC2EY200J	9- 70	A A		C	
VRD-RC2EY203J	8- 19	A A		C	
"	8- 26	A A		C	
VRD-RC2EY242J	7- 16	A A		C	
"	7- 17	A A		C	
VRD-RC2EY471J	9- 63	A A		C	
VRD-RC2EY472J	9- 50	A A		C	
"	9- 53	A A		C	
"	9- 56	A A		C	
"	9- 57	A A		C	
"	9- 58	A A		C	
"	9- 59	A A		C	
"	9- 65	A A		C	
"	9- 72	A A		C	
"	9- 75	A A		C	
VRD-RC2EY473J	7- 13	A A		C	
"	7- 15	A A		C	
VRD-RC2EY512J	9- 54	A A		C	
VRD-RC2EY621J	7- 14	A A		C	
VRD-RC2EY622J	9- 48	A A		C	
VRNRC2EK4701F	9- 78	A A		C	
VRS-FC3AA104J	11- 71	A A		C	
"	11- 78	A A		C	
VRS-RE3AA5R1J	9- 60	A B		C	
"	9- 77	A B		C	
VRS-RE3DA1R0J	7- 12	A B		C	
"	7- 18	A B		C	
VRS-TP2BD000J	9- 96	A A		C	
"	10- 5	A A		C	
"	10- 13	A A		C	
"	10- 161	A A		C	
"	10- 162	A A		C	
"	12- 6	A A		C	
VRS-TP2BD101J	10- 129	A A		C	
"	10- 157	A A		C	
"	10- 158	A A		C	
VRS-TP2BD102J	10- 147	A A		C	
VRS-TP2BD103J	9- 82	A A		C	
"	9- 83	A A		C	
"	9- 84	A A		C	
"	9- 85	A A		C	
"	9- 86	A A		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRS-TP2BD103J	9- 87	A A		C	
"	9- 88	A A		C	
"	9- 89	A A		C	
"	9- 90	A A		C	
"	10- 131	A A		C	
"	10- 134	A A		C	
"	10- 137	A A		C	
"	10- 139	A A		C	
"	10- 141	A A		C	
"	10- 143	A A		C	
"	10- 145	A A		C	
"	10- 149	A A		C	
"	10- 152	A A		C	
"	10- 154	A A		C	
"	10- 155	A A		C	
VRS-TP2BD122J	12- 19	A A		C	
VRS-TP2BD201J	12- 22	A A		C	
VRS-TP2BD203J	9- 80	A A		C	
"	9- 81	A A		C	
VRS-TP2BD220J	10- 140	A A		C	
"	10- 142	A A		C	
"	16- 15	A A		C	
"	16- 16	A A		C	
"	16- 17	A A		C	
"	16- 18	A A		C	
"	16- 19	A A		C	
"	16- 20	A A		C	
"	16- 21	A A		C	
"	17- 19	A A		C	
"	17- 20	A A		C	
"	17- 21	A A		C	
"	17- 22	A A		C	
"	17- 23	A A		C	
"	17- 24	A A		C	
"	17- 25	A A		C	
"	17- 26	A A		C	
"	18- 27	A A		C	
"	18- 28	A A		C	
"	18- 29	A A		C	
"	18- 30	A A		C	
"	18- 31	A A		C	
"	18- 32	A A		C	
"	18- 33	A A		C	
"	18- 34	A A		C	
"	18- 35	A A		C	
"	18- 36	A A		C	
VRS-TP2BD222J	10- 128	A A		C	
"	10- 130	A A		C	
"	10- 144	A A		C	
"	10- 151	A A		C	
"	10- 153	A A		C	
"	10- 156	A A		C	
"	10- 160	A A		C	
VRS-TP2BD301J	12- 21	A A		C	
"	12- 23	A A		C	
VRS-TP2BD330J	10- 9	A A		C	
"	10- 138	A A		C	
"	10- 146	A A		C	
"	10- 148	A A		C	
"	10- 163	A A		C	
VRS-TP2BD332J	10- 150	A A		C	
VRS-TP2BD472J	9- 91	A A		C	
"	9- 92	A A		C	
VRS-TP2BD561J	10- 132	A A		C	
"	10- 133	A A		C	
"	10- 135	A A		C	
"	10- 136	A A		C	
"	10- 159	A A		C	
"	12- 24	A A		C	
VRS-TP2BD913J	12- 17	A A		C	
VRW-GV3HC100K	11- 72	A C		C	
VRW-GV3HC220K	11- 73	A D		C	
VS2SA1451Y/-1	11- 67	A H		B	
VS2SA673AC/-1	11- 68	A E		B	
VS2SC4363//-1	11- 69	A B		B	
VS2SD1207S/-1	11- 66	A C		B	
VS2SK1016//-1	11- 64	A Q		B	
VS2SK1358//-1	11- 65	A R		B	
VVLLF7768G/-1	12- 30	A T		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VCKYTQ1HF104Z	18- 6	A A		C	
//	18- 7	A A		C	
//	18- 8	A A		C	
//	18- 9	A A		C	
//	18- 10	A A		C	
//	18- 11	A A		C	
//	18- 12	A A		C	
//	18- 13	A A		C	
VCKYTV1HF104Z	9- 6	A A		C	
//	9- 10	A A		C	
//	9- 11	A A		C	
//	9- 12	A A		C	
//	9- 16	A A		C	
//	9- 17	A A		C	
//	9- 18	A A		C	
//	9- 26	A A		C	
VCKYTV1HR102K	10- 21	A A		C	
//	10- 28	A A		C	
//	10- 57	A A		C	
VCKYTV1HR152K	10- 20	A A		C	
//	10- 22	A A		C	
//	10- 23	A A		C	
//	10- 39	A A		C	
VCKYTV1HR472K	9- 5	A A		C	
//	9- 7	A A		C	
//	9- 8	A A		C	
//	9- 9	A A		C	
//	9- 15	A A		C	
//	9- 19	A A		C	
//	9- 20	A A		C	
//	9- 21	A A		C	
//	9- 22	A A		C	
//	9- 23	A A		C	
VCKYTV1HR561K	10- 58	A A		C	
VCTYPU1HF104Z	7- 6	A B		C	
VHDDSS133HV-1	9- 33	A A		C	
//	9- 34	A A		C	
//	9- 35	A A		C	
//	9- 36	A A		C	
//	9- 37	A A		C	
//	9- 38	A A		C	
VHDERA9102/-1	11- 37	A C		B	
VHDESAC92M02/	11- 38	A H		B	
VHDRBV604//-1	11- 1	A H		B	
VHDRBV606//-1	11- 2	A H		B	
VHDSB80-05J-1	11- 39	A G		B	
VHD1SS270A/-1	11- 35	A A		B	
//	11- 36	A A		B	
//	11- 40	A A		B	
VHH18D8R0LA-1	11- 82	A G		B	
VHiAM26LS31-1	14- 24	A X		B	
VHiAM26LS32-1	14- 23	A X		B	
VHiAM29005-16	10- 78	B V		B	
VHiAM85C3016P	14- 25	B K		B	
VHiBA6886N/-1	9- 41	A L		B	
VHiHD44780/-1	12- 13	A S		B	
VHiLH534U0D-1	10- 84	A Y	N	B	
VHiLH534U0E-1	10- 86	A Y	N	B	
VHiLH534U0F-1	10- 88	A Y	N	B	
VHiLH534U0G-1	10- 89	A Y	N	B	
VHiLH534U0J-1	13- 15	A Y	N	B	
VHiLH534U0K-1	13- 17	A Y	N	B	
VHiLH534U0L-1	13- 19	A Y	N	B	
VHiLH534U0M-1	13- 21	A Y		B	
VHiLZ95H42///	10- 81	A W		B	
VHiL7A1191///	10- 75	B D		B	
VHiMC145407-1	14- 26	A U		B	
//	15- 9	A U		B	
VHiMC74F139MR	10- 94	A F		B	
//	16- 12	A F		B	
//	17- 14	A F		B	
//	18- 18	A F		B	
VHiMC74F157MF	10- 113	A H		B	
//	10- 117	A H		B	
//	10- 118	A H		B	
//	10- 121	A H		B	
//	10- 122	A H		B	
VHiMC74F175M/	10- 123	A F		B	
VHiMC74F244MR	16- 9	A G		B	
//	16- 10	A G		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VHiMC74F244MR	17- 11	A G		B	
//	17- 12	A G		B	
//	18- 15	A G		B	
//	18- 16	A G		B	
VHiMC74HC14AF	10- 115	A D		B	
VHiMSM514212/	10- 79	A Y		B	
//	10- 80	A Y		B	
VHiM37451S326	9- 42	A X	N	B	
VHiPST575CMT/	9- 45	A E		B	
VHiSLA7024M-P	7- 10	A T		B	
VHiSN74LS00-1	9- 40	A E		B	
VHiSN74LS04-1	14- 22	A E		B	
VHiSN74LS151N	8- 13	A G		B	
//	12- 14	A G		B	
VHiSN74LS166/	10- 114	A H		B	
VHiSN74LS173N	12- 15	A L		B	
VHiSN74LS244N	10- 91	A S		B	
//	10- 92	A S		B	
//	10- 93	A S		B	
VHiSN74LS32-1	14- 21	A F		B	
VHiSN74S04NS/	10- 110	A E		B	
VHiSN74S08N-1	16- 11	A G		B	
//	17- 13	A G		B	
//	18- 17	A G		B	
VHiULN2003AN1	9- 43	A E		B	
//	9- 44	A E		B	
VHiX24C04////	10- 100	A T		B	
VHiX24C44P/-1	9- 39	A N		B	
VHi27C4051AGC	10- 82	B K		B	
VHi27C4052AGC	10- 85	B K		B	
VHi27C4053AGC	10- 87	B K		B	
VHi27C4054AGC	10- 90	B K		B	
VHi4M16SOJ-70	10- 76	B G		B	
//	10- 77	B G		B	
//	16- 13	B G		B	
//	16- 14	B G		B	
//	17- 15	B G		B	
//	17- 16	B G		B	
//	17- 17	B G		B	
//	18- 19	B G		B	
//	18- 20	B G		B	
//	18- 21	B G		B	
//	18- 22	B G		B	
VHi4M16TSOP70	18- 23	B K		B	
//	18- 24	B K		B	
//	18- 25	B K		B	
//	18- 26	B K		B	
VHi74F08SJ/-1	10- 95	A E		B	
//	10- 112	A E		B	
//	10- 116	A E		B	
VHi74F153SJ-1	10- 99	A F		B	
//	10- 101	A F		B	
VHi74F163SJ-1	10- 106	A K		B	
//	10- 109	A K		B	
//	13- 25	A K		B	
//	13- 26	A K		B	
VHi74F175SJ-1	13- 23	A G		B	
VHi74F245SJ-1	10- 96	A G		B	
//	10- 97	A G		B	
//	10- 102	A G		B	
//	10- 103	A G		B	
//	10- 104	A G		B	
VHi74F273SJ-1	10- 119	A G		B	
VHi74F32SJ/-1	10- 105	A E		B	
//	10- 111	A E		B	
//	13- 27	A E		B	
VHi74F374SJ-1	10- 120	A N		B	
//	10- 124	A N		B	
//	13- 22	A N		B	
//	13- 24	A N		B	
VHi74LS153NS-	10- 98	A E		B	
VHi74VHC244/R	10- 108	A H		B	
VHi74VHC74//R	10- 107	A E		B	
VHPGP1S53V/-1	8- 14	A E		B	
//	8- 15	A E		B	
//	12- 16	A E		B	
VHPLT1D51A/-1	12- 12	A C		B	
VHPLT1H51A/-1	12- 9	A C		B	
//	12- 11	A C		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
[X]					
XBBSD30P06000	8- 29	A A		C	
XBPSD20P16000	3- 49	A A		C	
XBPSD30P04000	4- 79	A A		C	
XBPSD30P06000	3- 36	A A		C	
XBPSD30P10KSŌ	4- 55	A A		C	
XBPSD30P16KS0	10- 177	A A		C	
XBPSD30P32000	3- 31	A A		C	
XBPSE30P04000	3- 41	A A		C	
XBPSE30P06000	3- 50	A A		C	
XBPSN30P06K00	2- 57	A B		C	
XBPSN40P06K00	2- 55	A A		C	
//	3- 7	A A		C	
XCPSD40P10000	1- 9	A A		C	
XEBSD20P05000	3- 45	A A		C	
XEBSD30P06000	4- 49	A A		C	
XEBSD30P08000	2- 4	A A		C	
//	2- 28	A A		.C	
//	3- 10	A A		C	
//	3- 15	A A		C	
//	3- 53	A A		C	
//	4- 18	A A		C	
XEBSD30P10000	2- 17	A A		C	
XEBSD30P16000	2- 49	A A		C	
XEBSD40P08000	4- 45	A A		C	
XEBSD40P12000	1- 13	A A		C	
//	2- 7	A A		C	
XEBSE30P10000	2- 52	A A		C	
//	3- 52	A A		C	
XEPSD26P06000	4- 22	A A		C	
XEPSD30P06000	4- 84	A A		C	
XEPSD30P08X00	1- 25	A A		C	
//	2- 62	A A		C	
//	4- 64	A A		C	
XEPSE40P10000	1- 6	A A		C	
XHBSD30P04000	4- 50	A A		C	
XHBSD30P05000	2- 11	A A		C	
XHBSD30P06000	4- 19	A A		C	
//	4- 53	A A		C	
XHBSE30P08000	2- 70	A A		C	
//	3- 6	A A		C	
XNESD20-16000	3- 47	A A		C	
XNESD30-24000	10- 178	A A		C	
XRESP15-04000	4- 92	A A		C	
XRESP20-04000	4- 69	A A		C	
XRESP40-06000	2- 22	A A		C	
//	4- 33	A A		C	
//	4- 60	A A		C	
XRESP50-06000	2- 19	A A		C	
//	4- 3	A A		C	
XWVSD30-04065	2- 69	A A		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	

SHARP SERVICE MANUAL

CODE: 00ZJX9460SM/E
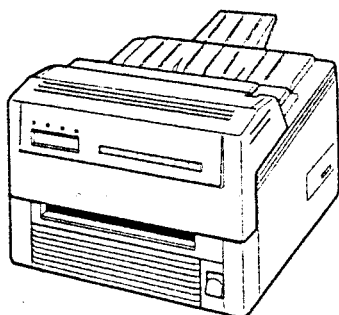
LASER PRINTER
JX-9460
MODEL JX-9460PS

— CONTENTS —

GENERAL

PRINT ENGINE

INTERFACE CONTROL UNIT (ICU)

CAUTION

This laser printer is a class 1 laser product that complies with 21CFR 1040.10 and 1040.11 of the CDRH standard and IEC825. This means that this machine does not produce a hazadous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazadous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eye's retina, there is danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

1) When a problem in the laser optical unit has occured, the whole optical unit must be exchanged as a unit, not an individual part.

2) Do not look into the machine with the main switch turned on after removing the developer unit, toner cartridge, and drum cartridge.

3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.

4) The upper frame and the middle frame contains the safety interlock switch.

   Do not defeat the safety interlock by inserting wedges or other items into the switch slot.

CLASS 1
LASER PRODUCT

LASER KLASSE 1

LASER WAVE – LENGTH : 780 ± 10nm
Pulse times : 45 ± 2µs/7mm
Out put power : 0.35mW ± 0.05mW

CAUTION
INVISIBLE LASER RADIATION.
WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

VORSICHT
UNSICHTBARE LASERSTRAHLUNG.
WENN ABDECKUNG GEÖFFNET UND
SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT.
NICHT DEM STRAHL AUSSETZEN.

VARO !
AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ
KATSO SÄTEESEEN.

ADVARSEL
USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR
SIKKERHEDSBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLNING.

VARNING !
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR
FARLIG.

SHARP CORPORATION

At the production line, the output power of the scanner unit is adjusted to 0.57 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC). Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

Caution
This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.

Laserstrahl	
CAUTION	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL.	USYNLIG LASERSTRÅLNING VED ÅBNING NÅR SIKKERHEDSBRYD-ERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLNING.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN-STRÅLEN AR FARLIG.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEIL YLLE ÄLÄ KATSO SÄTEESEEN.

Laserstrahl

CAUTION	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL.	USYNLIG LASERSTRÅLNING VED ÅBNING. NÅR SIKKERHEDSBRYD-ERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLNING.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN-STRÅLEN AR FARLIG.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEIL YLLE ÄLÄ KATSO SÄTEESEEN.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

LASER KLASSE 1

CLASS 1
LASER PRODUCT

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

The foregoing is applicable only to the 220V model, 230V model and 240V model.

JX-9460PS

Contents of printer engine and ICU section

I

To begin with

The laser printer is used in connection with the host such as a personal computer from which the print data is supplied.

The laser printer consists of two major blocks, the controller and the print engine.

The controller consists of the ICU (Interface Control Unit) which is employed to interpret the source print data to create dot pattern information based on the font.

The print engine is the block employed to print the data of the dot pattern information. The print engine includes the laser print mechanism, drum mechanism, and paper feed mechanism which are controlled by the PCU (Process Control Unit). Dot pattern information is sent to the laser print block that is controlled by the PCU where the data is converted into laser beams.

Laser printer

Host unit such as a personal computer — Coded data → ICU — Dot pattern → PCU

Controller   Printer engine
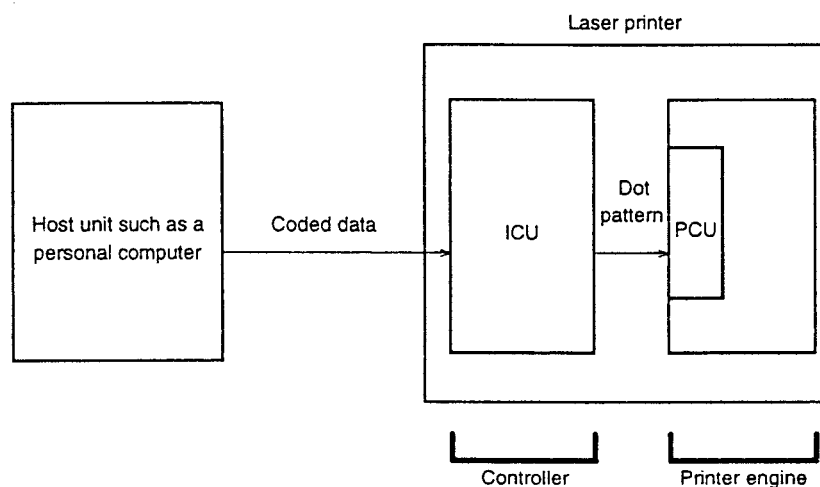
This Service Manual describes the printer engine, the PCU (Process Control Unit) which controls the printer engine, and the ICU (Interface Control Unit) which analyzes code data from the host to form dot patterns in this sequence.

JX-9460PS

[1] BASIC SPECIFICATIONS

Type:	Desktop
Resolution:	PCL --- 300 dpi + HRT
	PS --- 600 dpi (option for JX-9460)
Paper supply method:	250 sheets/80g/m²
	Manual paper supply (single feed)
	Used for thick papers (60 - 128 g/m²) and special papers (label paper, OHP)
Print speed:	Max. 6 pages/minute
	� However, in this case, letter size simple text containing 4,000 characters per page . Use prefeed function.
First print time:	Less than 15 sec. (paper pass time)
	✶ At stand-by mode
Paper output:	Face-down tray; 250 pages
Warm-up time:	Less than 60 sec.
	✶ Standard condition
Print process:	Electro-photographic printing method with semiconductor laser diode
Charging method:	Saw-tooth charging method
Developing method:	Dual components magnetic brush process
Drum cleaning method:	Blade cleaning method
Fusing method:	Heat roller method
	Upper side; Teflon coating roller
	Lower side; Silicon rubber roller
Power source:	AC 120, 220/230/240 V 50/60 Hz
Power consumption:	Max. 650W (120 V model)
	Max. 700W (220/230/240 V model)
Outside dimensions:	330(W) x 365(D) x 266(H) mm
	(13.0" x 14.4" x 10.5")
Weight:	Approx. 12.1 kg (26.7 lbs)
Noise level:	48dB maximum (Printing)
	40dB maximum (Idle)
Emulation:	HP LaserJet III (PCL5)
	Epson FX-80
	IBM Proprinter
	IBM Graphics Printer
	Post Script Level 1
Interface:	Centronics
	RS-232C (option)
	Apple Talk (option)
Memory:	Standard 1.0 MB
	Max. 9.0 MB (with option)
Accessories:	Photo-conductor cartridge: one piece (initial life; 5000 pages)
	Toner/developer cartridge: one piece (initial life; 5000 pages)
	Heat roller cleaner: one piece (A4 or Letter)
	Paper cassette: one piece
	Power cord: one piece
	Manual feed guide: one piece
	Operation manual: one set
	Windows Printer Driver
	Windows Screen Font
Supplies:	Photo-conductor cartridge (30,000 pages life (A4, Letter-4% coverage))
	Toner/developer kit (include roller cleaner) (15,000 pages life (A4, Letter-4% coverage))

Options:	
Font card:	
Bitmap	HP - 8 types
Outline	HP - 2 type

Paper cassette:	
Letter cassette	250 sheets
Legal cassette	250 sheets
A4 cassette	250 sheets
Envelope cassette	20 sheets
Expansion memory:	1 MB board
	2 MB board
	4 MB board
Interface board:	RS-232C I/F board
	Apple Talk/RS232C I/F board (with PS driver)

JX-9460PS

4. Display Specification

*1. Conditions for "Toner low"
When one of the following two conditions is satisfied, "Toner low" is displayed.

1. The developer counter (DEV) reaches 29,000.
The life of the cartridge packed with the JX-9460 body is 4,000.

2. The total rotating time of the toner motor (DEVTM) reaches 19,600 sec. (Toner equivalent to 14,000 copies of 4% print is consumed.) The life of the cartridge packed with the JX-9460 body is 5600 sec.
The life of the cartridge packed with the JX-9460 body is 5,000.

*2. Condition for "REPL toner"
When one of the following five conditions is satisfied, "REPL toner" is displayed.

1. The developer counter (DEV) reaches 30,000.

2. Toner is refilled continuously for 40 sec in the preliminary rotations of power ON, then further refilled for 90 sec until the first page is printed.

3. Toner is refilled over the specified time continuously or multiply 5 sheets during conduction. Toner is refilled for 30 sec continuously and the first sheet is printed with the TS level at a high level (with the toner density at a low level).
Then toner is refilled for 45 sec continuously with the TS level at a high level (with the toner density at a low level) and the second sheet is printed. Similarly toner is refilled for 60 sec and the third sheet is printed. → The fourth sheet is printed after 60 sec of refilling. → The fifth sheet is refilled after 60 sec of refilling. → REPL. TONER

Supplemental figures for describing refilling operation

Fig. 1
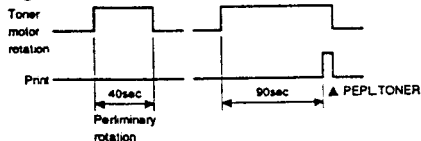
Fig. 2

Fig. 3
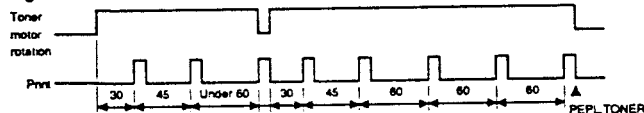
4. DEV NEW fuse is not blown. (After DEV adjustment, if the fuse is not blown, set the DEV counter to 30000 to reach REPL. TONER.)

5. When the developer cartridge is not installed. In other word, the sensor output level is abnormal (lower than 0.5V or higher than 4.0V).
Note: For "Toner low" and "REPL. TONER", the CPU judges the conditions after 2 sec from turning on of the main motor to recognize each error. (Wait for stabilization of the toner sensor output level.)

*3. Conditions "DRUM NEAR END"
When one of the following two conditions is satisfied, "DRUM NEAR END" is displayed.

1. The drum counter (DRM) reaches 29,000.

2. The total rotating time of the toner motor (DRMTM) reaches 58,000 sec. (Toner equivalent to 29,000 copies of 4% print is consumed.)

In the case of the cartridge packed with the JX-9460 body.

1. The drum counter (DRM) reaches 4,000.

2. The total rotating time of the toner motor (DRMTM) reaches 8,000 sec.

*4. Conditions for "REPL DRUM"
When one of the following two conditions is satisfied, "REPL DRUM" is displayed.

1. The drum counter (DRM) reaches 30,000.

2. The total of rotating time of the toner motor (DRMTM) reaches 60,000 sec. (Toner equivalent to 30,000 copies of 4% print is consumed.)

In the case of the cartridge packed with the JX-9460 body.

1. The drum counter (DRM) reaches 5,000.

2. The total of rotating time of the toner motor (DRMTM) reaches 10,000 sec.

*5. In case of data error, set the page protection to A4, letter, or legal.

Reference: Supply life table total of *1 thru *4

Life	Print pages		Toner motor rotations (sec)	
	JX-9460 same package items	Option	JX-9460 same package items	Option
Drum near end	4,000	29,000	8,000	58,000
Drum end	5,000	30,000	10,000	60,000
Toner low	4,000	29,000	5,600	19,600
REPL Toner	5,000	30,000	*1	*1

*1: Final judgment is not made on the toner motor rotations.

[2] OPERATOR PANEL DESCRIPTION

The operation panel is used to set the Laser Printer off-line for direct operations, such as setting the menu items and executing self-tests.
Note the following when using the operation panel:

- Set the printer off-line before using the keys.
- Some keys have several funct⸱ ⸱s, which are selected by the duration of time the key is pleased. Be sure to check the functions on the display.

PANEL VIEW
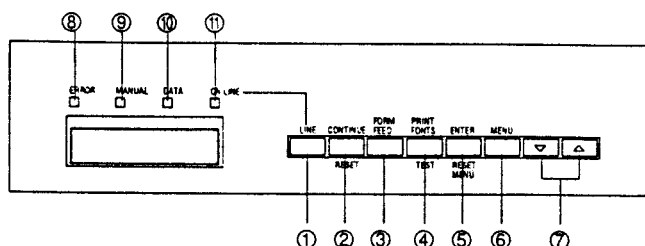
1. Key functions

① LINE key

Used to alternately set the printer on-line and off-line. Also used to set the printer on-line after performing the self tests or setting the menu items. The laser printer can receive data from the computer when on-line (ON LINE lamp on) and cannot receive data from the computer when off-line (ON LINE lamp-off).

② CONTINUE/RESET key

Used to select the following two functions:

CONTINUE: Clears most errors

Used for the following operations:

- To set the printer on-line from the off-line state after an error.
- To cancel printer self-test and set the printer on-line.
- To set the printer on-line from the menu setting mode.
- To continue printing with the current paper source even when the printer requests a different paper size (or envelope type).

RESET: Resets the Laser Printer to ensure that the panel default settings (the menu settings selected by the user) are available.
Includes the following operation:

- In HP LaserJet series III emulation, temporary soft fonts and temporary macros are cleared.
- Stored page data is cleared.

③ FORM FEED key

Prints data in the print buffer when the printer is off-line. This key is not functional when the printer is on-line.

④ PRINT FONTS/TEST key

Used to select the following three functions:

PRINT FONTS: Prints out available fonts.

SELF TEST #1: Prints the settings of the various menu items.

SELF TEST #2: Starts test pattern printing.

⑤ ENTER/RESET MENU key

Used to select the following two functions:

ENTER: Specifies the menu values to be saved as panel default settings.

RESET MENU: Initializes all items in the Printing Menu to the factory default settings.
Also resets the following:

- In HP LaserJet series III emulation, temporary soft fonts and temporary macros are cleared.
- Stored page data is cleared.

⑥ MENU key

Used to select the following two functions:

PRINTING MENU: Enters the Printing Menu mode. (See [13]-8. MENU SETTING STRUCTURE)

CONFIGURATION MENU: Enter the configuration Menu mode. (See [13]-8. MENU SETTING STRUCTURE)

⑦ △ and ▽ keys

Used to select values for the menu items. Each time the keys are pressed the menu values change.

2. LED activation and blink conditions

⑧ ERROR lamp (red)

Lights when any error occurs.

⑨ MANUAL lamp (yellow)

Lights when the manual feed mode is selected.

⑩ DATA lamp (yellow)

Lights when the print buffer contains data to print. Blinks if the Laser Printer has waited more then 5 seconds for a form feed command and a partial page remains in the printer buffer.

⑪ ON LINE lamp (green)

Lights when the Laser Printer is set on-line and ready to receive data from the computer. If the LINE key is pressed during printing to set the Laser Printer off-line, this lamp blinks until the page being printed is fed out, indicating that the Laser Printer cannot be set to off-line.

3. 16 digit LCD display

The 16-character liquid crystal display indicates the following:

- Status messages
- Menu settings
- Error conditions
- Service messages

Service Messages

Display	Meaning
SERVICE (C1)	Optical System Error
SERVICE (C2)	Driving Motor Defective
SERVICE (C3)	Polygon Motor Defective
SERVICE (C4)	High Heater Temperature
SERVICE (C5)	Low Heater Temperature
SERVICE (C6)	Thermistor Open
SERVICE (C7-C9)	(Reserved)

Display	Meaning
SERVICE (E1)	ICU ROM Checksum Error
SERVICE (E2)	ICU RAM Read/Write Error
SERVICE (E3)	Expansion Memory Error
SERVICE (E4)	ICU Hardware Read/Write Error
SERVICE (E5)	EE-PROM Checksum Error
SERVICE (E6-E9)	(Reserved)
SERVICE (FC)	Font card error

Display	Meaning
SERVICE (P1)	PCU ROM Checksum Error
SERVICE (P2)	PCU RAM Read/Write Error
SERVICE (P3)	Non-volatile RAM Read Error
SERVICE (P4)	Serial Communication Error
SERVICE (P5-P6)	(Reserved)

Menu setting Messages

* See [13]-8 MENU SETTING STRUCTURE.

Power save mode

This printer has the power save mode as a default setting to reduce power consumption by reducing the temperature of the fusing unit. If no data is supplied from the computer or no key operation is performed for a certain amount of time, the printer changes to the power save state. However when the printer is in the power save state, it takes longer to start printing the first page because it takes some time to raise the temperature of the fusing unit.

It is possible to adjust the length of time that elapses before returning to the power save state. The power save mode can also be turned off. Follow the procedures listed below.

1. If you turn on the power while pressing the △ key, "POWER SAVE 90" will appear on the display. (This indicates that if no data is input or no key operation is performed for 90 seconds, the printer will return to the power save state.)

2. Press the △ or ▽ key to select the desired value:
   POWER SAVE 90
   POWER SAVE 180
   POWER SAVE 255
   POWER SAVE OFF

3. Turn off the power and the new values will be set.

NOTE:
If you try to start printing when the printer is in the power save state, "READY" may blink on the display, indicating that the printer is warming up.

Power save mode specifications

1. Holding the UP (△) key pressed when turning on the power enters the power save mode setting diag.
2. During the power save mode setting diag, the mode can be set with the UP (△) key and the DOWN (▽) key.
3. By turning off the power during displaying the power save mode setting diag selection, the power save mode is set as follows:

DISPLAY	TIMER TO ENTER THE MODE	POLYGON MOTOR	CONTROL TEMP	FAN MOTOR	REMARKS
POWER SAVE 90	90 sec	OFF	100°C	5-minute OFF/ONE minute ON RPT	Default value
POWER SAVE 180	180 sec	OFF	100°C	.	
POWER SAVE 255	255 sec	OFF	100°C	.	
POWER SAVE OFF	90 sec	OFF	162°C	ON	

4. The power save mode set contents are not changed by turning off/on the power in a mode other than the power save mode setting diag.
5. The default when shipping is "POWER SAVE 90."
6. When the SLPOFF command from the controller is received, the polygon motor and the fan will not stop. With the SLPON command, the mode returns to the power save mode.

Procedures and operations of the power save mode setting diag

Procedures	Operations	Remark
Power on	Normal display	
After completion of warm-up. leave it for 90 sec.	Polygon motor off, the fan motor repeats 5-min off/one min on. 100°c of control temperature	Enters the power save mode in 90 sec after completion of warm-up
Power off		
△ + Power on △ △ △ ▽ ▽ ▽ ▽	Power save 90 display Power save 180 display Power save 255 display Power save off display Power save 90 display Power save off display Power save 255 display Power save 180 display	Enters the power save mode setting diag. The mode to be set is changed. The mode to be set is restored. The mode to be set is changed reversely
Power off		
Power on	Normal display	
After completion of warm-up. leave it for 180 sec.	Polygon motor off, the fan motor repeats 5-min, off/one min. on. 100°c of control temperature	The operation of power save 180 in the display mode when the power is turned off in the power save mode setting diag.
Power off		
Power on	Normal display	
After completion of warm-up. leave it for 180 sec.	Polygon motor off. the fan motor repeats 5-min, off/one min. on. 100°c of control temperature	The mode is stored even when the power is turned off/on.

[3] UNPACKING AND INSTALLATION

1. Installation requirements

Improper installation may damage the printer. Please note the following during initial installation and whenever the printer has been moved:

(1) Be sure to use the rated voltage from a properly grounded wall outlet only.

(2) Do not install the printer in areas that are:
- damp or humid,
- exposed to direct sunlight,
- extremely dusty or smoky,
- poorly ventilated,
- subject to extreme temperature or humidity changes, for example, near an air conditioner or heater.
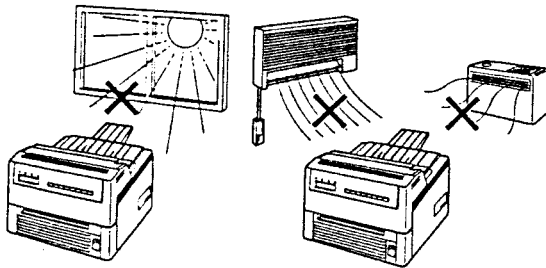
(3) Place the printer on a firm, level table or desk, with enough space to insert the paper cassette and to manually feed the paper.

(4) To ensure proper operation and ventilation, leave at least as much space on each side as shown below.

2. Unpacking
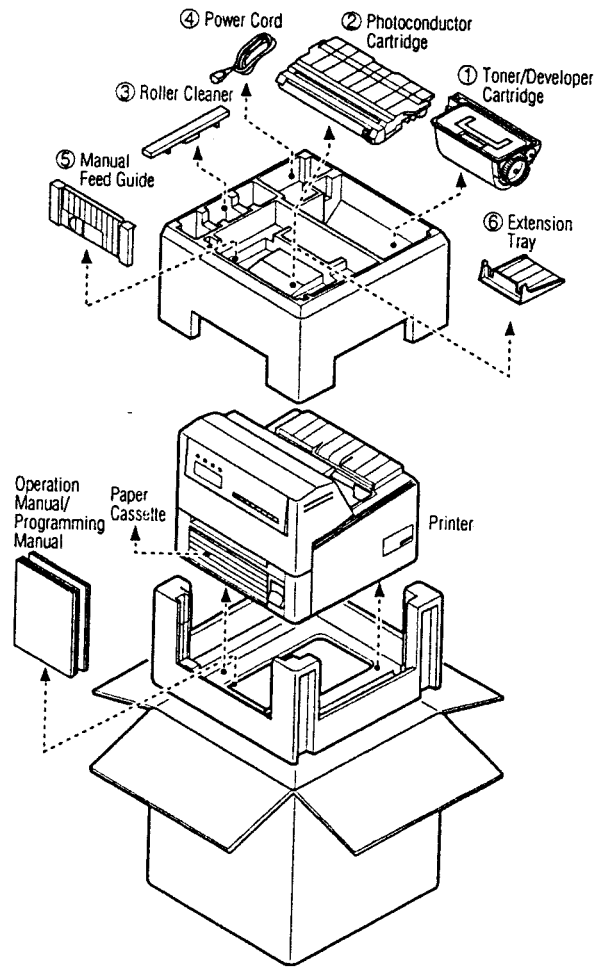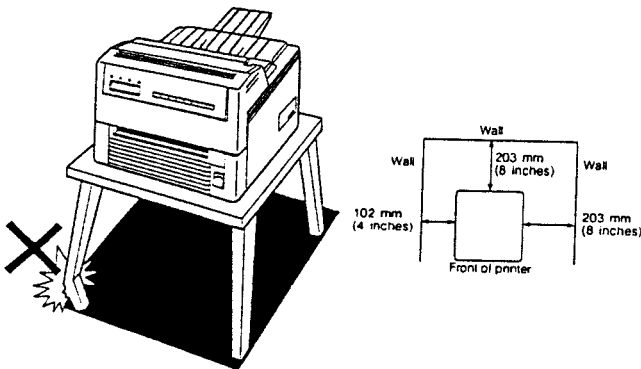
NOTE:
- Save the carton and packing materials. They should be used to repack and protect the printer if it must be shipped for servicing.

-6-

3. Setting up

3-1. Installing supplies

3-1-1. Installing the Toner/Developer Cartridge

① Be sure that the printer is turned off.

② Open the front cover.

- Push the cover release lever and open the front cover by holding both sides.

Front cover

Cover release lever
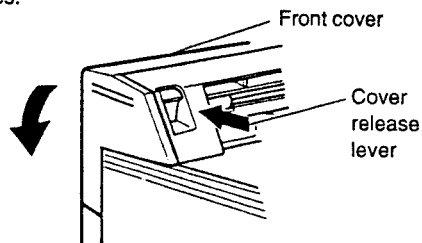
③ Remove the toner/developer cartridge from the aluminium bag.

④ Shake the toner/developer cartridge vigorously four or five times.
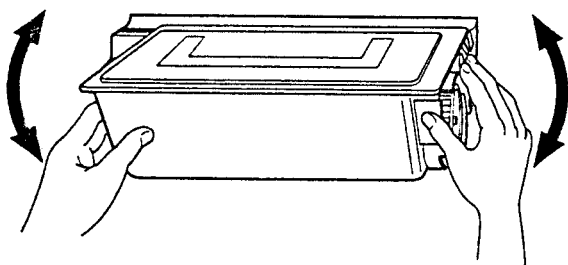
5. Use the handle to hold the toner/developer cartridge horizontally with the roller to the front side and position it gently. Push down the handle.
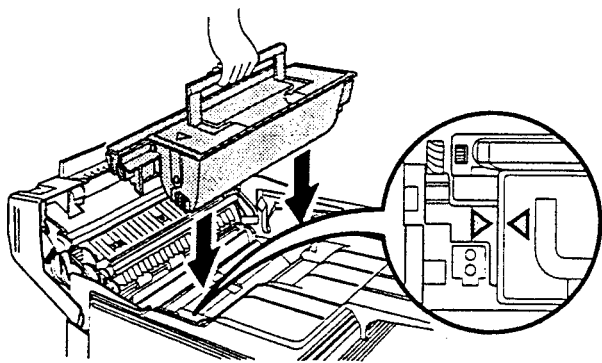
⑥ Pull the tab to remove the seal while pressing the toner/developer cartridge.

3-1-2. Installing the Photoconductor Cartridge

① Remove the photoconductor cartridge from the aluminium bag. Do not use a knife to cut the bag.
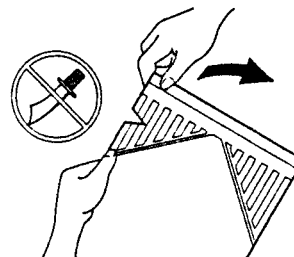
NOTE:

- When placing the photoconductor cartridge on a desk temporarily before installing, be sure to place it on a level desk. Otherwise, this may be damaged.
- The new photoconductor cartridge is sealed with a black protective sheet. To prevent damage to the cartridge surface, do not remove the protective sheet until you have positioned the cartridge into place.

② Insert the new photoconductor cartridge vertically with the drum down along the frame guides, pressing downward firmly (①). Then, continue to apply downward pressure and place the photoconductor cartridge in a horizontal position until it clicks (②).
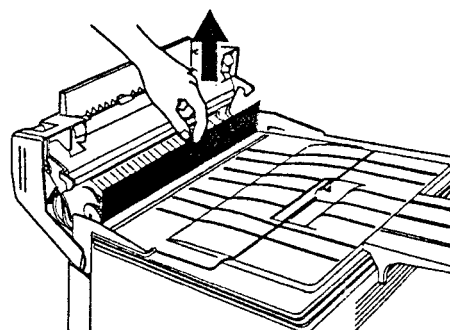
③ Remove the protective sheet.
   Be sure not to leave any torn pieces in the printer.
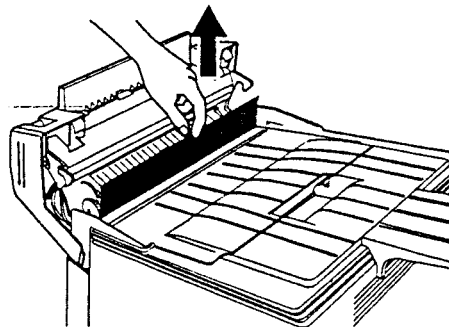
3-1-3. Installing the Roller Cleaner

① Open the top cover while keeping the front cover open.

NOTE:
Press both sides until the top cover clicks.
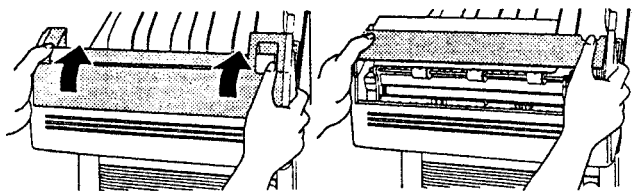
② Remove the roller cleaner from the plastic bag and install it on the fusing unit.
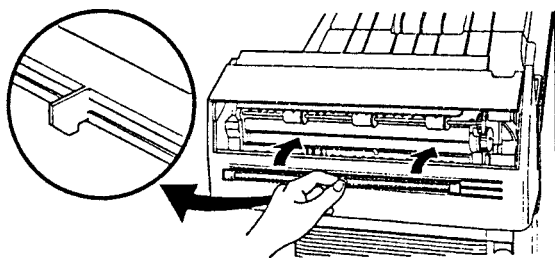
3. Close the top cover until it clicks.
4. Close the front cover until it clicks.

3-2. Connecting power cord and interface cable

3-2-1. Power Cord

① Be sure the power is turned off.

② Plug the power cord into the power cord connector at the back of the printer.
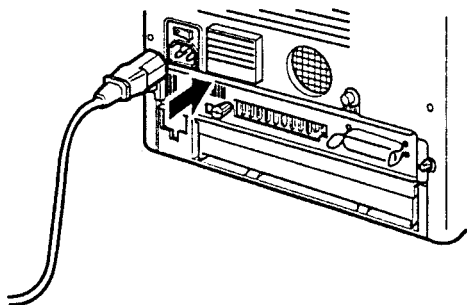
3-2-2. Interface Cable

This Laser Printer is equipped with a Centronics parallel interface.

NOTE:
A shielded, grounded cable and connector are required to comply with either FCC Class B or VDE 0871 and 0875 requirements.

① Be sure the power is turned off.

② Remove the protective cover from the connector.

③ Plug the cable into the connector.

Interface Cable — Parallel Interface Connector
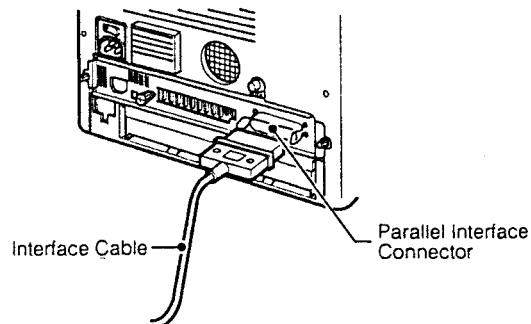
④ Fasten the bail clips for the parallel connector.

3-3. Loading paper

3-3-1. When using the paper cassette for the first time:

① Press the cassette eject button to take out the paper cassette.
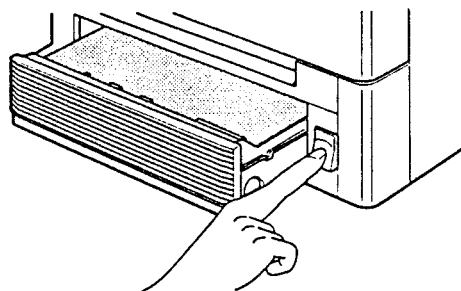
② Remove the stopper by pressing it with your thumb and rotating it as shown below while holding the pressure plate securely with your other hand.
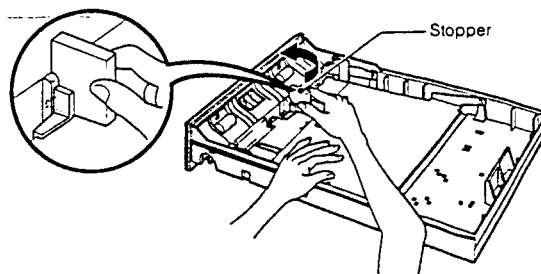
Stopper

NOTE:
Save the stopper since this should be used to protect the cassette if it must be transported.

3-3-2. Loading paper:

① Push the pressure plate down until it locks in position.
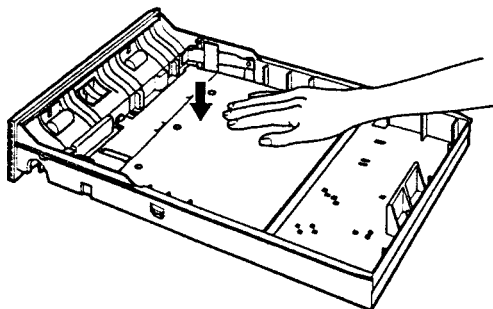
② Place the paper in the cassette with the corners under the metal corner tabs. Remove some paper if the paper is tight under the metal corner tabs. Shake the paper cassette gently to straighten the paper.

* Note that the side facing up is the printing side.
* Do not load paper above the red maximum height line, or paper may misfeed.

Tabs

Red maximum height line
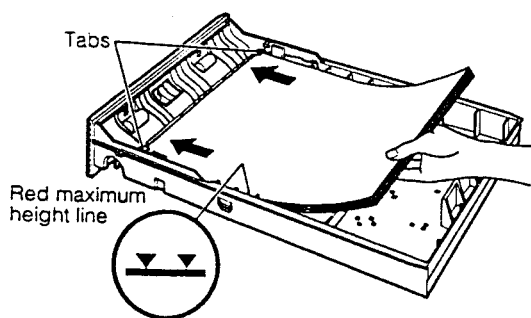
③ Slide the paper cassette into the printer until it locks into place.
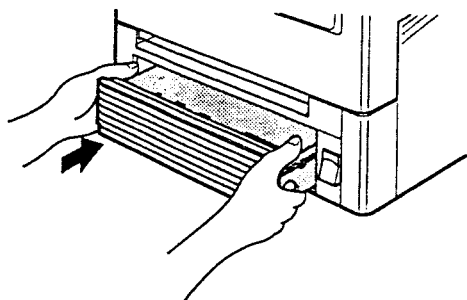
NOTE:
* Please use the extension tray for large size copies or at any time to ensure tidy stacking of out put sheets.
Attach as shown in the diagram.
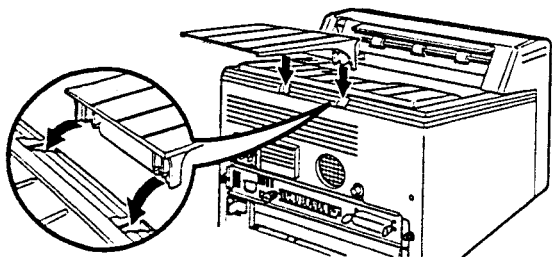
* Do not apply oil to the roller of the cassette.

3-3-3. Setting the manual feed guide

Insert the Manual Feed Guide into the Manual Feed Slot from an angle, put the claws in place, and then position the Manual Feed Guide horizontally.
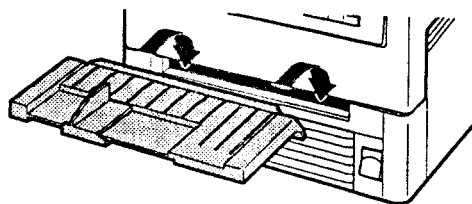
3-4. Selecting a language

The messages shown on the display, font printout, and SELF TEST #1 printout can be selected from five different languages: English, French, German, Italian, and Spanish. English is the default setting. If you want to select another language, follow the procedure below.

① Press the [LINE] key to set the printer offline.

② Press and hold the [MENU] key until "I/F=PARALLEL*" appears on the display.

③ Press the [MENU] key several times until "MESSAGE=ENGLISH*" appears on the display.

④ Press the △ or ▽key to select the desired language:
ENGLISH
FRENCH
GERMAN
ITALIAN
SPANISH

⑤ Press the [ENTER/RESET MENU] key.

* An asterisk (*) appears on the right side of the display.

⑥ Press the [MENU] key several times until the display shows "READY".

⑦ Press and hold the [CONTINUE/RESET] key until "RESET" appears on the display to save the setting.

* "READY[LJ3]T" appears on the display, and the ON LINE lamp lights.

⑧ When all the settings are completed, perform SELF-TEST #1 before printing to confirm the selected values.

NOTE:
In the following pages, all messages, font printouts, and SELF-TEST #1 printouts are shown in English.

3-5. Performing self-tests

After you have performed all the installation procedures, we recommend that you perform the self-tests to ensure that the printer is working properly. There are two self-tests: SELF TEST #1 and SELF TEST #2.

SELF TEST #1 produces a printout showing current printing and configuration menu settings, and other information about the printer's current status.
SELF TEST #2 prints an entire sheet of characters in a test pattern using the internal character set.

Before you perform these tests, check the following:
* Toner/developer cartridge, photoconductor cartridge, and roller cleaner have been installed.
* Paper cassette is loaded with paper.
* Printer is connected to a power outlet.
(A computer is not required for these tests.)

NOTE:
When you perform a self-test, be sure to use A4, Letter, or Legal size paper. If you use any other types of paper, only a part of the print area will be printed on the sheet.

3-5-1. Entering the Self-Test Mode

1. Press the power switch to turn on the printer.
   - "SELF TEST" appears on the display.
   - The ON LINE lamp lights, and "READY [LJ3]T" appears on the display. In about 60 seconds, "READY" stops blinking.
2. Press the [LINE] key to set the printer offline.
   - The ON LINE lamp turns off.
   - "READY" appears on the display.

3-5-2. Self-Test #1

1. Press and hold the [PRINT FONTS/TEST] key until the display shows "SELF TEST #1".
   - The DATA lamp lights and printing begins.
   - A printed sheet similar to the sample shown below is output.
   - When printing is complete, the DATA lamp turns off and "READY" appears on the display.

3-5-3. Self-Test #2

1. Press and hold the [PRINT FONTS/TEST] key until the display shows "SELF TEST #2".
   - The DATA lamp lights and printing begins.
   - The printed test pattern is output, and the DATA lamp turns off.
   - Check that the printout is similar to the sample shown below.

(Note) Self test 1 and self test 2 cannot be conducted in PS emulation.

4. Installing options

4-1. Font Cards

Credit card sized font cards are available as options, and provide fonts that are not supplied with the printer. See Options, page 86.
To use a font card, insert it face up into one of the font card slots located on the right side of the printer. Insert the end with the two grooves into the printer first.

Grooves
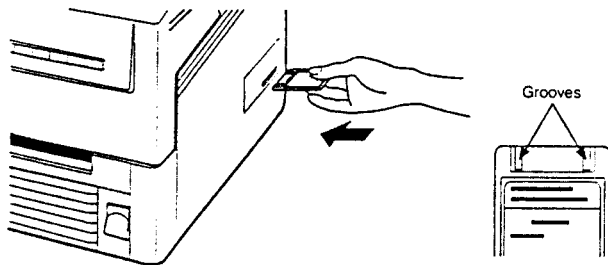
CAUTION

Be sure to insert or remove the font card while the ON LINE lamp and the DATA lamp are off. Inserting or removing the font card while these lamps are either lit or blinking may result in erratic printing or hardware errors.

4-2. Expansion Memory and Interface Boards

Expansion Memory and Interface Boards

Before installing each of these boards, perform steps 1, 2, and 3. After installing each board, perform step 4.

① Turn off the power switch and remove the power cord. Remove the font card if installed. Remove the interface cable if installed.

② Remove the left and right thumbscrews that hold the controller board in place by turning them counterclockwise. Do not remove the central thumbscrew in this step.
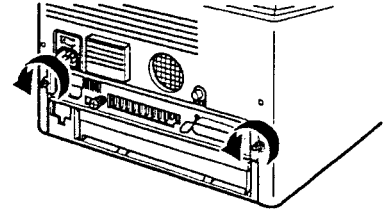
③ Carefully pull the controller board completely out of the printer by using the central thumbscrew and the bail clips for the connector on the front face.
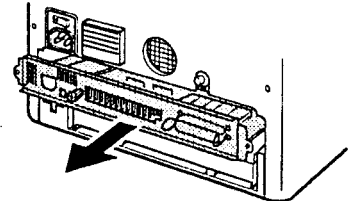
④ Install the controller board into the printer by pushing the controller board gently along the guide rails in the slot and replace the left and right thumbscrews.

NOTE:
- When you complete the installation of each board, perform Self-Test #1 to check operation.
- When an optional board is inserted again or the printer is moved, be sure to check that the board is properly inserted before turning on the printer.

Expansion Memory Board:

Remove the expansion memory board from its package. Install the memory board by inserting the side that does not have a connector under the securing ledge of the controller board (①), then lowering the side with the connector onto the controller board connector (②). In JX-9460PS, 1 MB expansion memory board has been installed already.
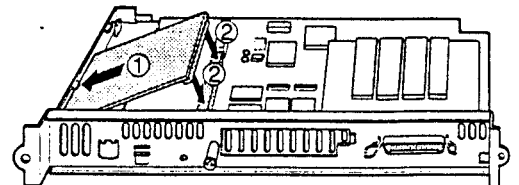
PostScript Board:

Remove the PostScript board from its package. Insert this board as shown in the figure.
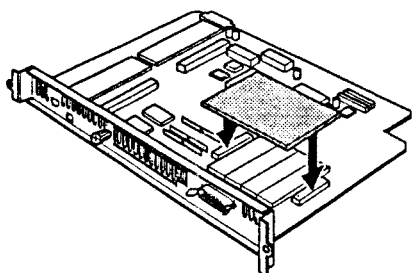
Interface Board:

1. Remove the interface board from its package. Remove the front plate of the controller board by removing the central thumbscrew, sliding the plate to the right, and then lifting the left end of the plate while pressing it a little to the right.
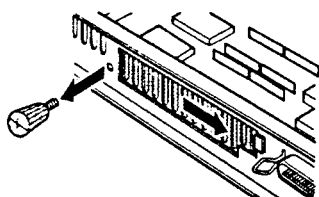
2. Insert the interface board into the opening and insert the bottom connecter to the controller board as shown in the figure below. If not installing the interface board, do not remove the front plate.
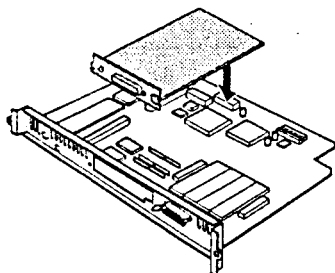
5. Others

5-1. Cleaning the Main Charger

① Turn off the power.

② Open the front cover.

 • Push the cover release lever (①) and open the cover by holding both sides (②).
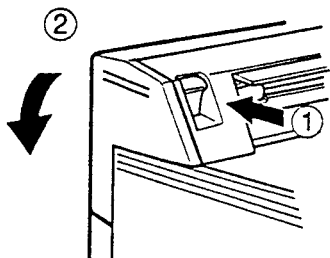
③ Position the photoconductor cartridge vertically.

 • Insert your hand into the opening between the face down tray and the photoconductor cartridge. Push the lever at the back of the photoconductor cartridge with your fingers and then rotate the cartridge until the cartridge is positioned vertically. The main charger exists near the drum.
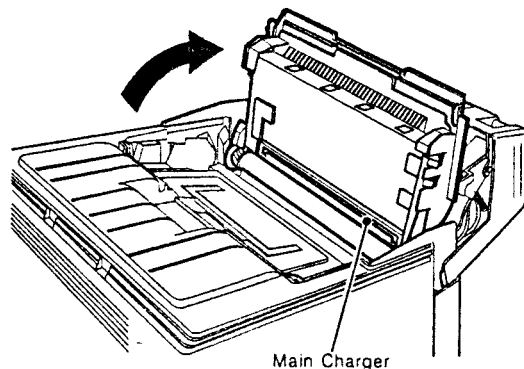
Main Charger

④ Remove the charger cleaner from the rear cover.
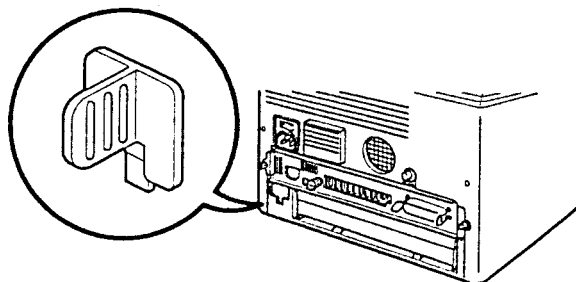
⑤ Insert the charger cleaner into the main charger and clean the metal plate by sliding the cleaner as shown below.
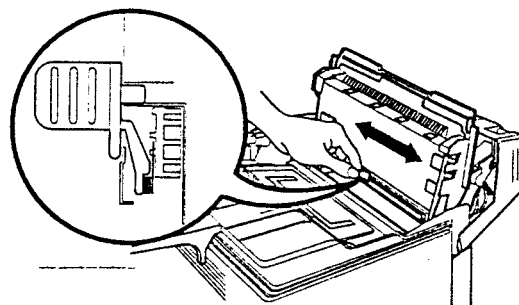
NOTE:
 • Do not pull out the cleaner halfway on the metal plate. Be sure to end at either the left or the right end on the plate.

⑥ Replace the charger cleaner on the rear cover.

⑦ Close the photoconductor cartridge until it clicks.

⑧ Close the front cover.

⑨ Turn on the power.

5-2. To clean the transfer charger:

1. Turn off the power.

2. Open the front cover.

   • Push the cover release lever (①) and open the cover by holding both sides (②).
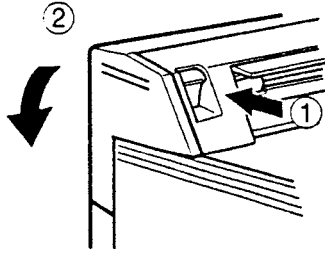
3. Remove the charger cleaner from the rear cover.
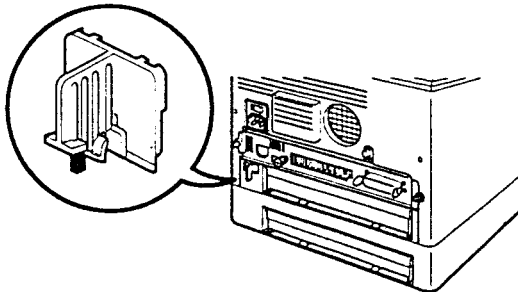
4. Insert the charger cleaner into the transfer charger at the left end, as shown below, and clean the wire by sliding the cleaner to the right.

NOTE:

   • Do not pull out the cleaner halfway along the wire. Be sure to go all the way to right end of the wire.

   • Be sure to slide the cleaner in the direction shown below. Sliding in the opposite direction may damage the wire.
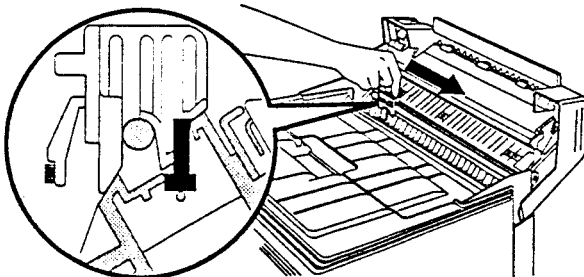
5. Replace the charger cleaner on the rear cover.

6. Close the front cover.

7. Turn on the power.

5-3. Shipping instructions

Follow the procedure below whenever transporting or shipping the printer.

① Open the front cover.

   • Push the cover release lever (①) and open the cover by holding both sides (②).
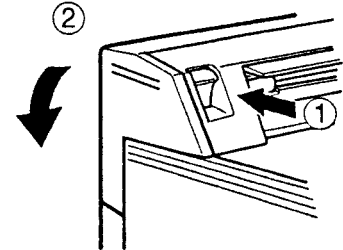
② Remove the photoconductor cartridge and the toner/developer cartridge.

NOTE:

Any time the photoconductor cartridge is removed from the printer, it must be placed in a bag which does not allow the photoconductor cartridge to be exposed to light. This is required to prevent the photoconductor from being overexposed to ambient light.

③ Remove the paper from the paper cassette and secure the pressure plate with the stopper so that the node of the stopper is inserted into the hole of the cassette front side and the claw of the stopper engages with the pressure plate. Replace the paper cassette.
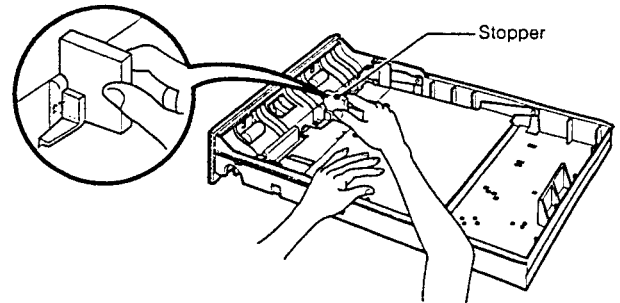
④ Close the front cover.

⑤ Pack the printer, reversing the order of the UNPACKING instructions.

NOTE:

   • When returning the printer for servicing, include:
   A) A written explanation of the problem encountered.
   B) Any print samples which may help in diagnosing the problem.

   • Do not include toner/developer cartridge or photoconductor cartridge unless specifically requested by SHARP.

JX-9460PS

[4] SUPPLIES

1. Kinds of papers

Standard Papers

• **Automatic Feeding from the Paper Cassette**

Sizes

A4	Letter	Legal
210 x 297 mm	8-1/2" x 11"	8-1/2" x 14"

Weights

60 g/m² 16 lbs.	⟷	80 g/m² 21 lbs.

• The A4 size cassette is a standard accessory on the printer. Cassettes in other sizes are available as options.

• **Manual Feeding**

Sizes
Max. paper size: Max. width 216 mm (8-1/2")
Max. length 356 mm (14")
Min. paper size: Min. width 98 mm (3-7/8")
Min. length 190 mm (7-1/2")

Weights

60 g/m² 16 lbs.	⟷	128 g/m² 34 lbs.

• 210 x 297 mm (A4) is the maximum size for paper weighing more than 105 g/m² (28 lbs.).

Envelopes

Sizes

International DL 110 x 220 mm	International C5 162 x 229 mm
Commercial 10 (Business) 4-1/8" x 9-1/2"	Monarch 3-7/8" x 7-1/2"

Weights

60 g/m² 16 lbs.	⟷	90 g/m² 24 lbs.

• An optional envelope cassette is available for continuous feeding of up to 20 envelopes.

• Do not use envelopes with metal tabs, snaps, windows, strings, or other attachments, which may damage the printer.

Special Papers (manual feed only)

Transparency film	(manual feed only)

Sizes

A4 210 x 297 mm	Letter 8-1/2" x 11"

• Be sure to use only transparency films and labels that are recommended by SHARP.

2. Photo-conductor cartridge, developer/toner cartridge

Name	Product name	Pcs/pack	Life	Note
Photo-conductor cartridge (with W·T·B)	JX-96DR	5	30,000 pages (A4 or LT 4% black image area)	
Toner/developer cartridge with roller cleaner	JX-96DC	5	15,000 pages (A4 or LT 4% black image area)	All destinations except for USA and CANADA
	JX-96ND	5	30,000 pages (MAX)	USA, CANADA only

• **Storage condition**

RH Humidity
90%   40°C, 90%
10%
-10°C   40°C
Temperature
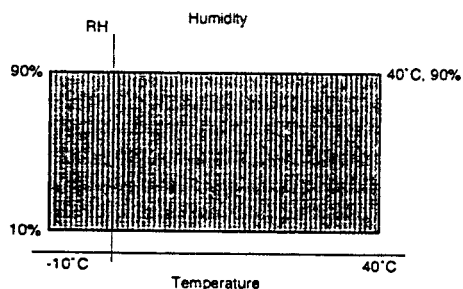
✱ Storage period
24 month after the production month (not-unpacked and storage condition)

• **Transport condition**

RH Humidity
90%   40°C, 90%
10%
-10°C   40°C
Temperature
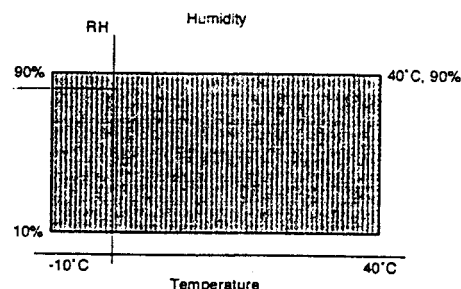
• **Lot number identification**

Photo-conductor cartridge and Toner/developer cartridge

◯◯◯◯◯◯◯
Year   Serial   Month
         number   1
Destination   2
                3
                ⋮
                0: 10
                X: 11
                Y: 12

-13-
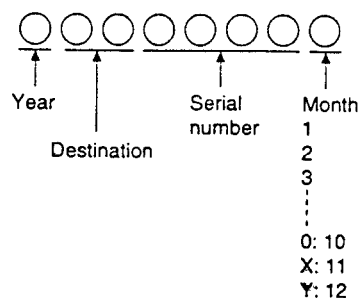
[5] OUTLOOK AND INTERNAL STRUCTURE

1. Outlook
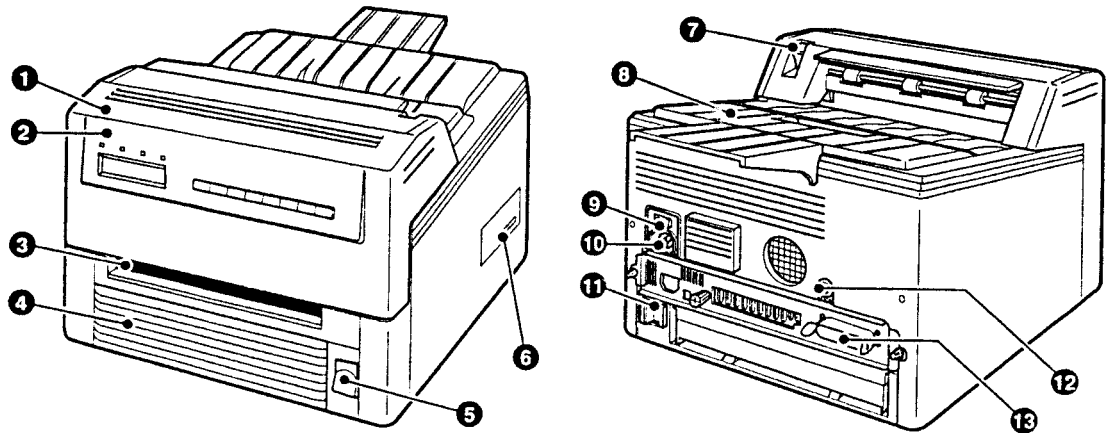
Fig. 5-1

PART NAME	DESCRIPTION
❶ Front Cover	——
❷ Operation Panel	Include the indicator lamps, operation keys, and display.
❸ Manual Feed Slot	Accepts the manual feed guide for feeding special papers, envelopes, and paper not in the cassette.
❹ Paper Cassette	Holds up to 250 sheets of paper.
❺ Cassette Eject Buttons	Press to eject paper cassette.
❻ Font Card Slot	Accept optional font cards for additional font selection.
❼ Cover Release Lever	Push to open the front cover.
❽ Face Down Tray	Collects the printed paper face down.
❾ Power Switch	Press to turn the printer power on and off.
❿ Power Cord Connector	——
⓫ Charger Cleaner	The charger cleaner is used for maintenance. (See [3]-5-1.)
⓬ Print Density Adjuster	To increase print density, rotate this clockwise.
⓭ Centronics Parallel Interface Connector	——

2. Open view
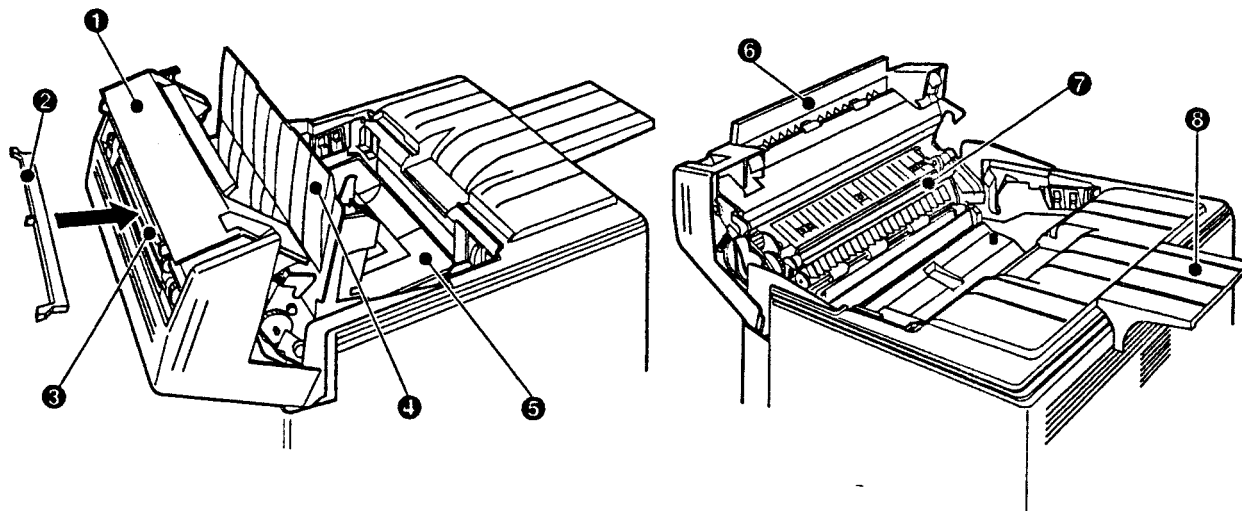
Fig. 5-2

PART NAME	DESCRIPTION
❶ Top Cover	Open to check for misfed paper.
❷ Roller Cleaner	Before the printer is used for the first time, install the roller cleaner on the top of the fusing unit.
❸ Fusing Unit	Nicrome wire is used in the heater lamp
❹ Photoconductor Cartridge	Supply item
❺ Toner/Developer Cartridge	Supply Item
❻ Paper Output Guide Cover	——
❼ Transfer Charger	——
❽ Extension Tray	Please use for large size copies or at any time to ensure tidy stacking of output sheets.

3. Cross section

-15-
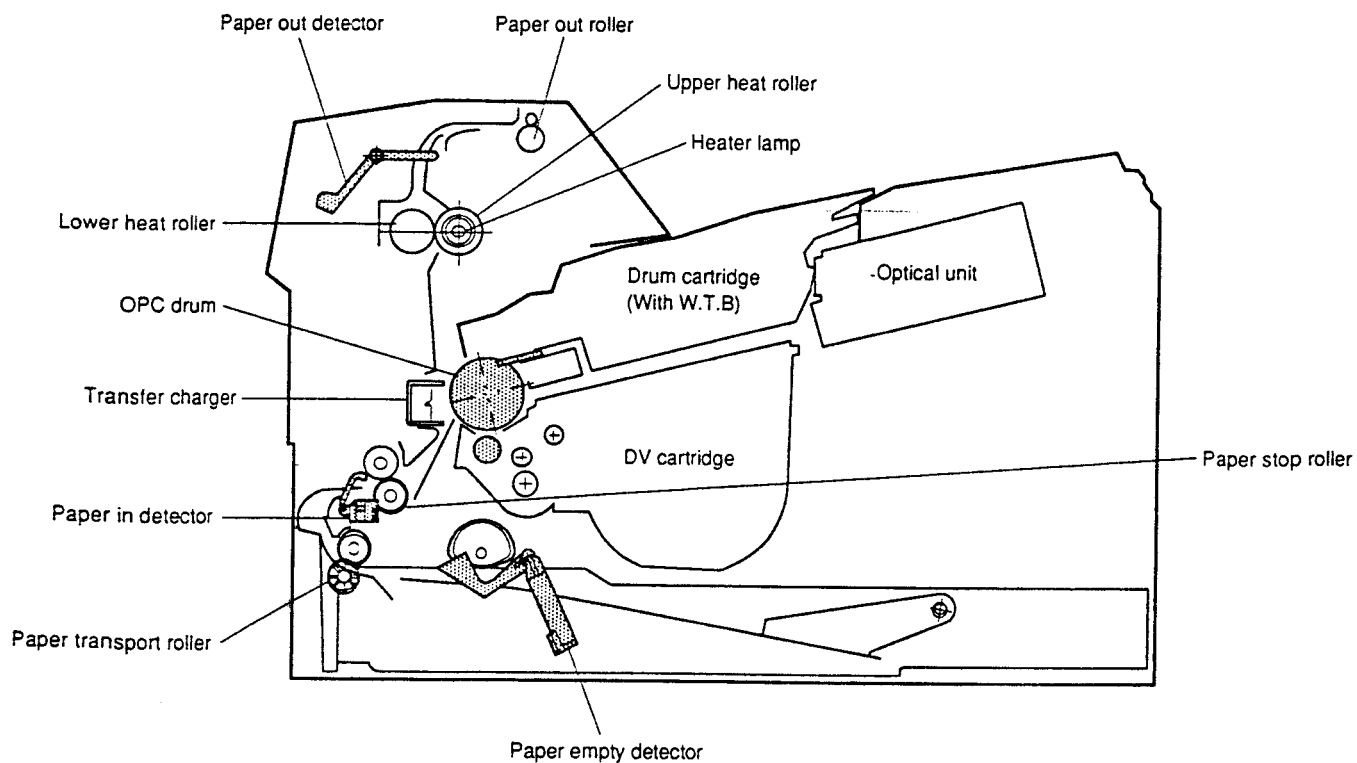
4. Switch, Sensor, Detector
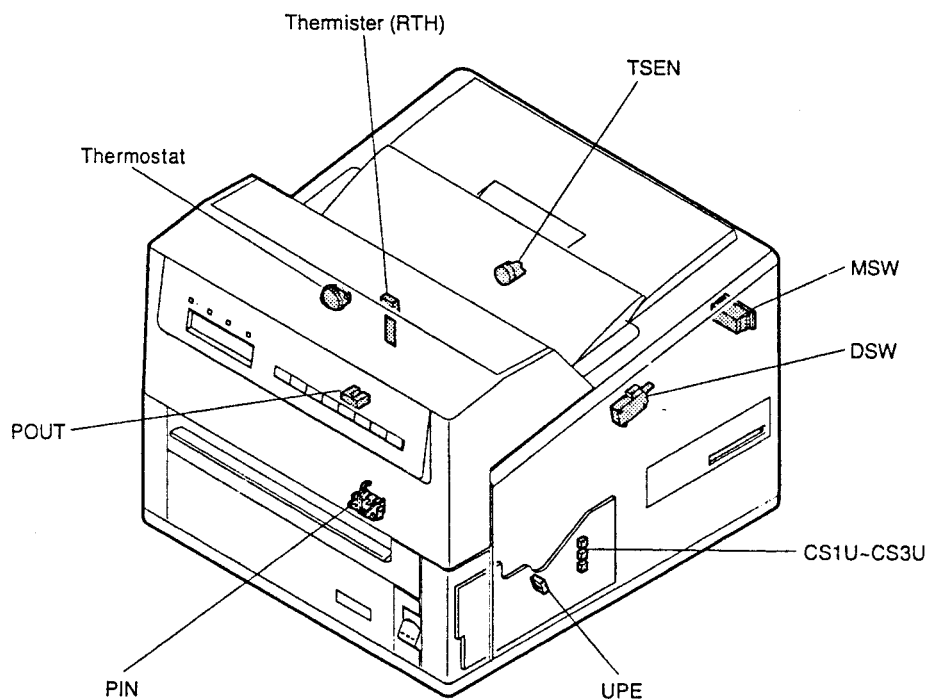
Fig. 5-4

Name	Function	Type
PIN	Paper in detector	Reed switch
POUT	Paper out detector	Photo sensor
UPE	Upper cassette empty detector	Reed switch
CS1U ~ CS3U	Upper cassette size detector	Push switch
MSW	MAIN SWITCH (Power SW)	—
DSW	Front cover open detector (24V, 5V line safety switch)	Micro switch
TSEN	Toner control sensor	Magnetic sensor
RTH	Heat roller surface temperture sensor thermistor	Thermistor
THERMOSTAT	——————	Thermostat

5. Motor, Solenoid, Clutch
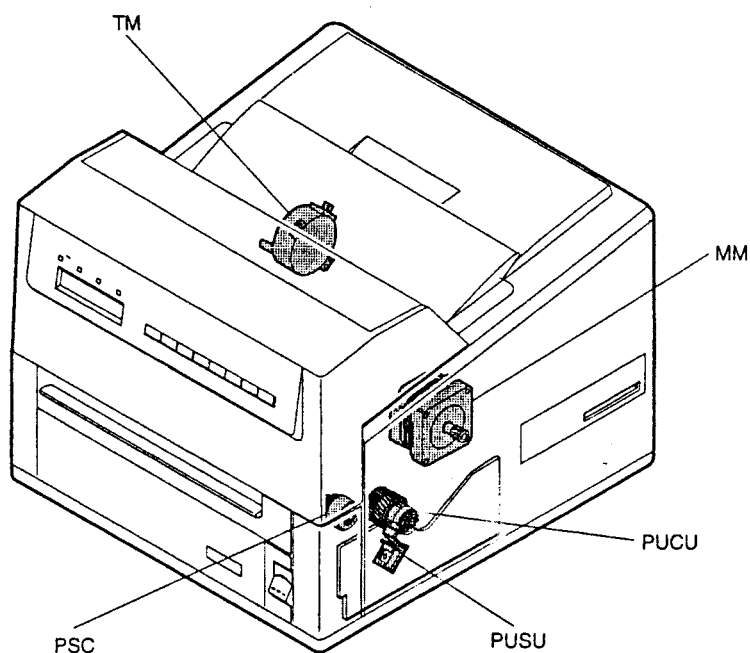
Fig. 5-5

Name	Function	Type
MM	Main motor	Steping motor
TM	Toner motor	AC motor
PSC	Paper stop (resist) clutch	Electrical magnetic clutch
PUSU	Upper pick up roller solenoid	Solenoid
PUCU	Upper pick up clutch	Spring clutch

6. P.W.B
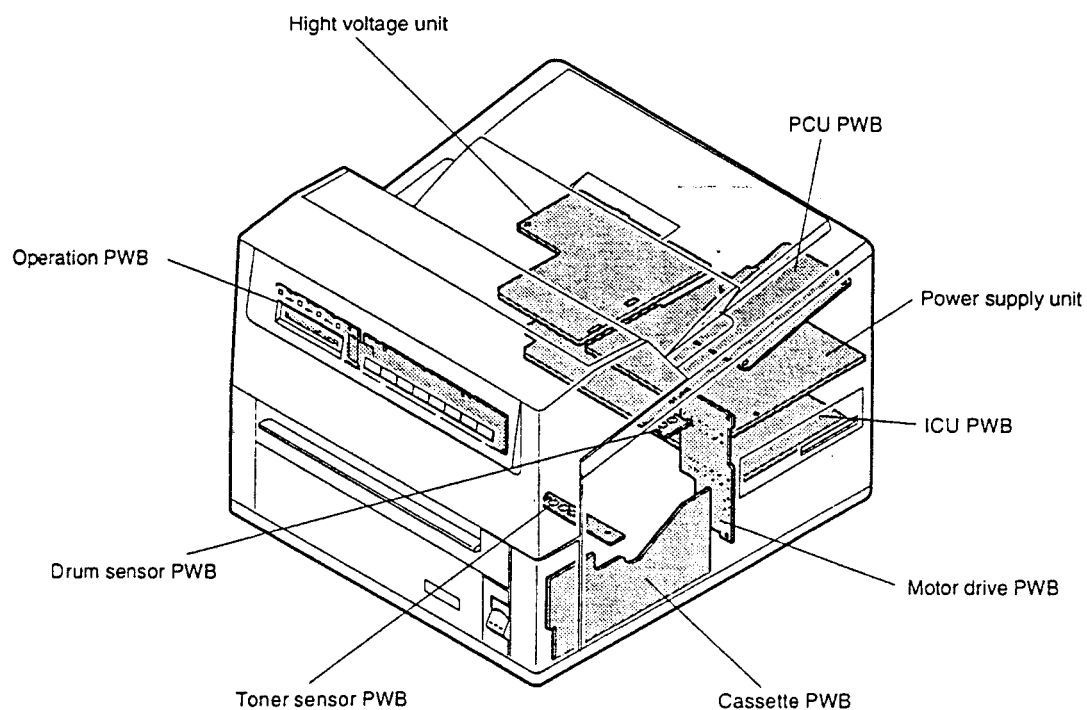
Fig. 5-6

[6] PRINT PROCESS

An OPC drum is used for the photoconductor.
(Structure of the OPC drum layers)

OPC layer
(20microns thick)

Pigment layer (0.2
to 0.3 microns thick)

Aluminium drum
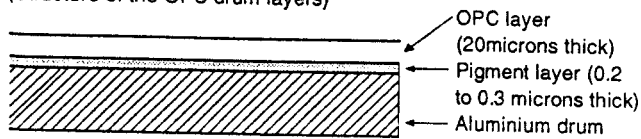
1. Functional diagram
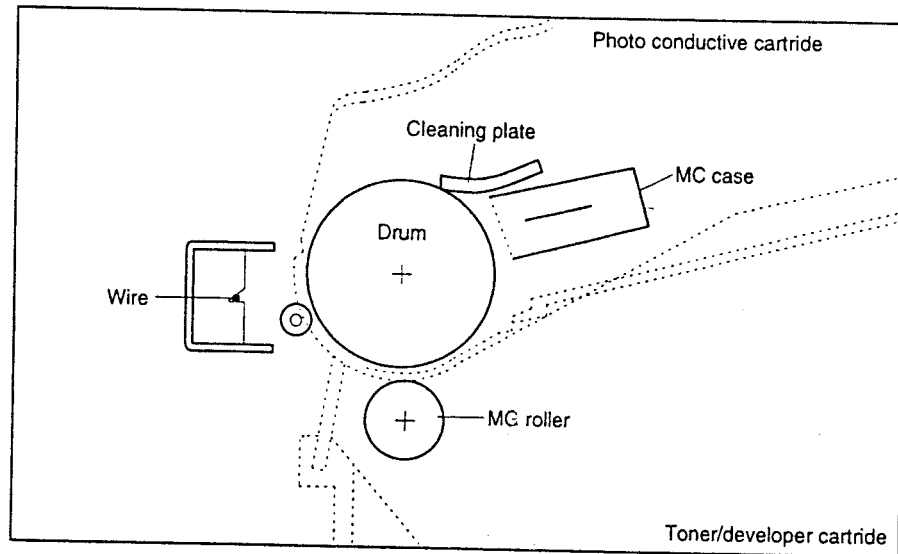
Fig. 6-1

(Basic operation cycle)

Fig. 6-2

-18-
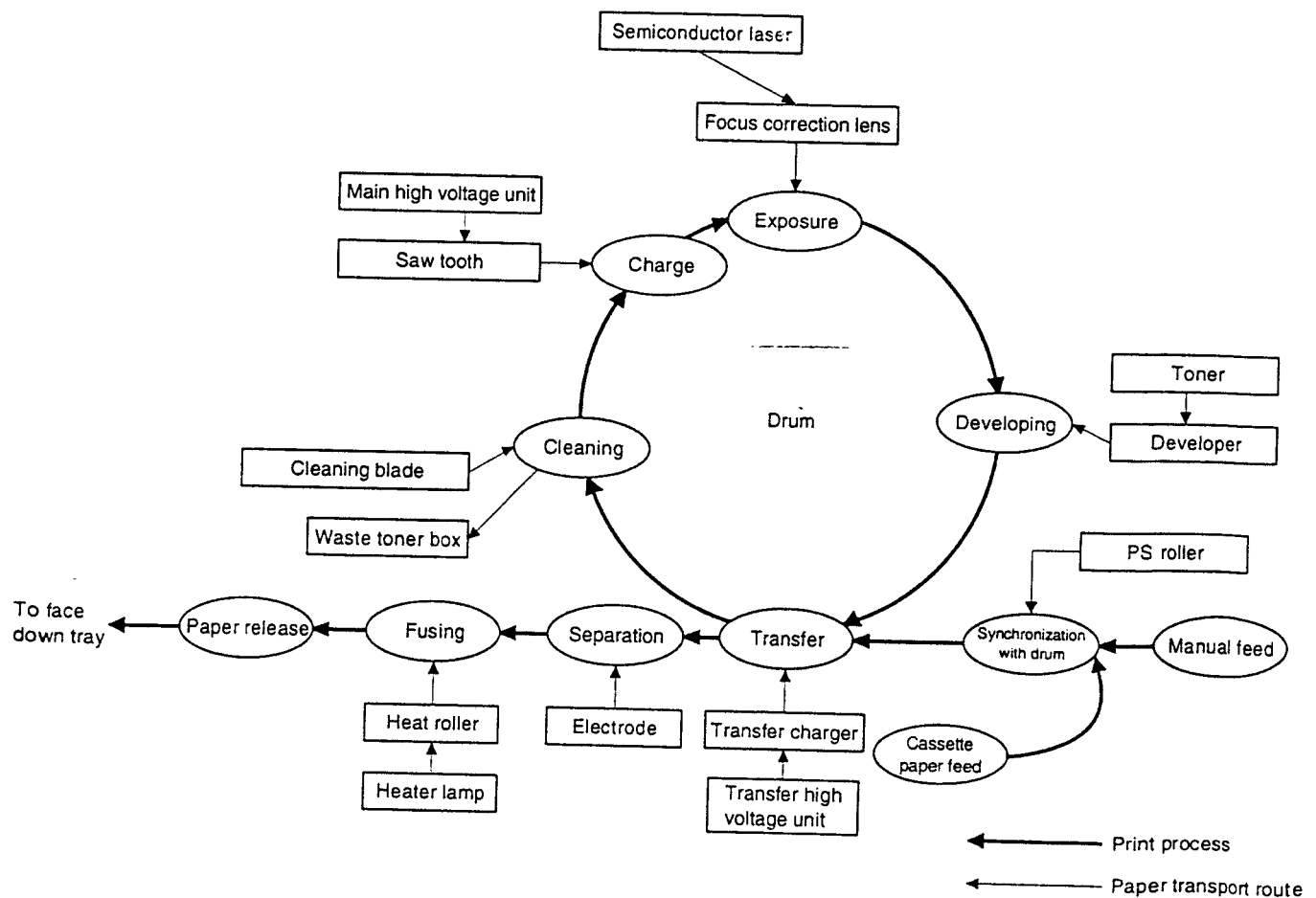
2. Image forming process steps

This printer is a non-impact printer that uses the semiconductor laser and electrostatic print process and uses an OPC (Organic Photo Conductor) for its photoconductive material. First, corona from the main corona unit charges the drum surface and a latent image is formed on the drum surface using a laser beam. This latent image forms a visible image on the drum surface with toner. The toner image is then transferred onto the print paper by the transfer corona and fixed on the print paper using the fuser roller, and pressure.

Step-1:   Charge

Step-1: Charge   Latent image is formed on the drum.
Step-2: Exposure

Step-2:   Exposure

Step-3:   Developing
Latent image formed on the drum is then changed into visible image with toner.

Step-4:   Transfer
The visible image (toner image) on the drum is transfered onto the print paper.

Step-5:   Cleaning
Residual toner on the drum surface is collected by the cleaning blade.

Step-6:   Optical discharge
Residual charge on the drum surface is removed, by semi-conductor laser beam.
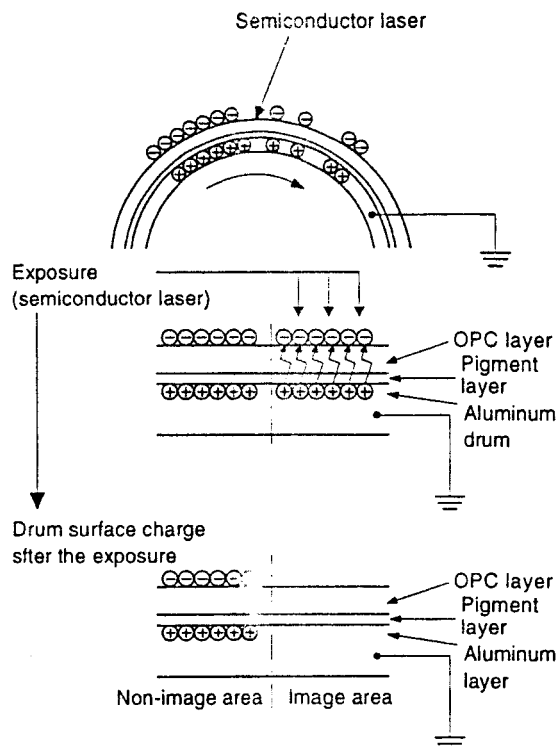
3. Basic print process

Step-1: DC charge

A uniform negative charge is applied over the OPC drum surface by the main charging unit. Stable potential is maintained by means of the Scorotron charger.
Positive charges are generated in the aluminum layer.
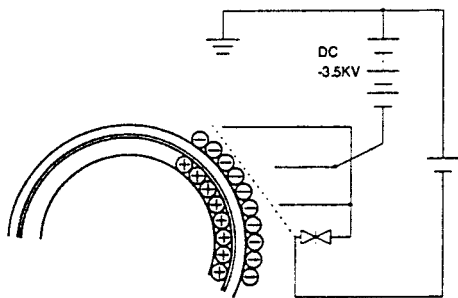
Fig. 6-3

Step-2: Exposure (laser beam, lens)

A Laser beam is generated from the semiconductor laser with the print pattern signal. It is exposed onto the OPC drum surface through the polygon mirrors and lens. The resistance of the OPC layer decreases for an area exposed by the laser beam (corresponding to the print pattern signal). The beam neutralizes the negative charge. The electrostatic latent image is formed on the drum surface.

Semiconductor laser

Exposure
(semiconductor laser)

OPC layer
Pigment layer
Aluminum drum

Drum surface charge
after the exposure

OPC layer
Pigment layer
Aluminum layer

Non-image area | Image area

Fig. 6-4

Step-3: Developing (DC bias)

A bias potential is applied to the MG roller in the two component magnetic brush developing method, and the toner is charged negative through friction with the carrier.
Non-image area of the drum surface charged with negative potential repel the toner, whereas the bright exposed portions where there are no negative charges exist are developed by the toner. As a result, a visible image appears on the drum surface.

⊕ : Carrier (Magnetized particle)
● : Toner (Charge negative by friction)
(N) (S) :Permanent magnet
(provided in three locations)

MG roller

DC
-240V--380V
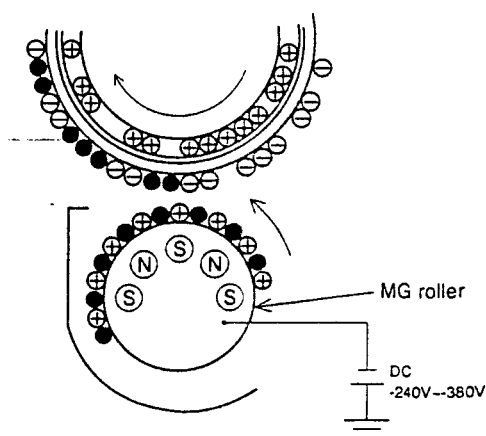
Fig. 6-5
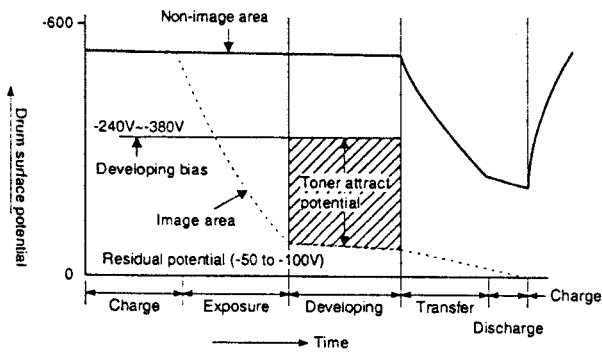
Fig. 6-6

Toner is attracted over the shadowed area because of the developing bias.

Step-4: Transfer

The visible image on the drum surface is transferred onto the print paper by applying a positive charge from the transfer corona to the back of the print paper.
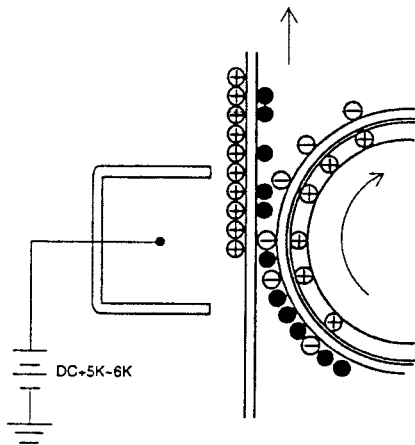
Fig. 6-7

Step-5: Separation

Since the separation electrode is grounded, the print paper charged positively by transfer is discharged to be separated.

Step-6: Cleaning

Toner remaining on the drum is collected by the cleaner blade and transported to the waste toner collecting section in the cleaning unit, by the waste toner transport roller.
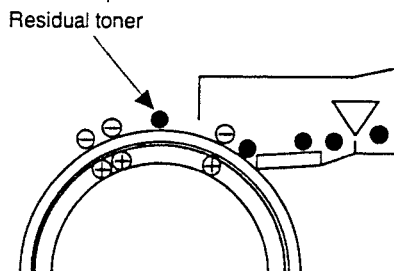
Fig. 6-8

Step-7: Optical discharge (Semiconductor laser)

Before the drum rotation is stopped, semiconductor laser is radiated onto the drum to reduce the electrical resistance in the OPC layer and elimate residual charge, providing a uniform state to the drum surface.

When the electrical resistance is reduced, positive charges on the aluminum layer are moved and neutralized with negative charges on the OPC layer.
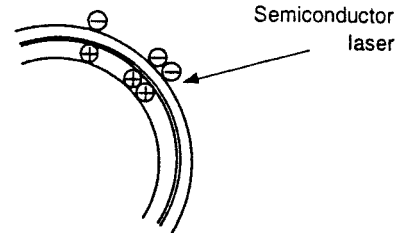
Fig. 6-9

Charge by the Scorotron charger

Function

The Scorotron charger functions to maintain the surface potential of the drum even at all times which can be used to control the surface potential regardless of the charge characteristics of the photoconductor.

Basic function

A screen grid is provided between the saw tooth and the photoconductor, a stable voltage is added to the grid to apply the corona current to the photoconductor and the grid.

As the photoconductor is charged by the corona from the main corona unit, the surface potential increases. This increases the current flowing through the screen grid. When the photoconductor potential nears the grid potential, the entire current turns to flow to the grid so that the photoconductor potential can be maintained at a stable level.

Process controlling

Function

Print pattern signal is converted into a visible image by the semiconductor laser using negative to positive (reversible) developing method. Therefore, if the developing bias is added before the drum is charged, toner is attracted onto the drum. If the developing bias is not added when the drum is charged, the carrier is attracted to the drum because of the strong electrostatic force of the drum.

To avoid this, the process is controlled by adjusting the drum potential and the grid potential of the Scorotron charger.

Basic function

Voltage added to the screen grid can be selected, high and low.

To make it easily understood, the figure below shows voltage transitions at the developer unit.
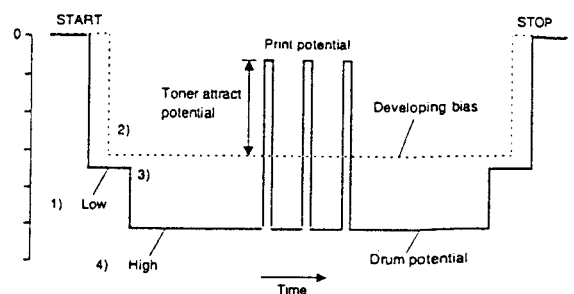
Fig. 6-10

Start

1) Because the grid potential is at a low level, the drum potential is at about –250V. (Carrier may not be attracted though the carrier is pulled towards the drum by the electrostatic force of –250V.

2) Developing bias (–300V) is applied when the photoconductor potential is switched from LOW to HIGH.

3) Though developing bias (–300V) is applied, since the photo conductor potential rises to HIGH, toner is not attached.

Stop

The reverse sequence takes place.

Retaining developing bias at an abnormal occurrence

Function

The developing bias will be lost if the power supply was shut off during printing due to a power supply failure. In this event, the drum potential slightly abates and the carrier makes deposits on the drum because of strong static power. To prevent this, the machine incorporates the function to retain the developing bias for a certain period against a possible power supply failure.

Basic function

Normally, the developing bias voltage is retained for a certain time before the drum comes to a complete stop, if the machine should stop before completing the normal print cycle. In this way, the developing bias can be added before resuming the operation after an abnormal interruption. No carrier will therefore be deposited on the drum surface.

[7] OPERATIONAL DESCRIPTION

The engine block is composed of the following sections.

1. Paper feed and transport section
2. Print process section (Refer to [6] PRINT PROCESS.)
3. Fusing section
4. Optical section
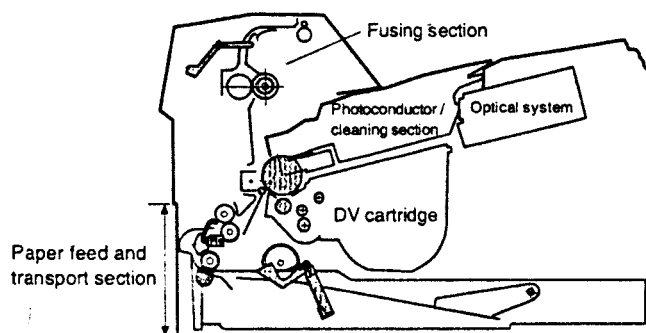
Fig. 7-1

1. Paper feed and transport section

1-1. Paper feed system

* 250-sheet cassette (Front loading)
* manual feed paper (Single feed)

1-2. Kinds of papers

Refer to [4] SUPPLIES.

1-3. Operational description

Timing of paper feed, transport, and paper discharge is shown below:
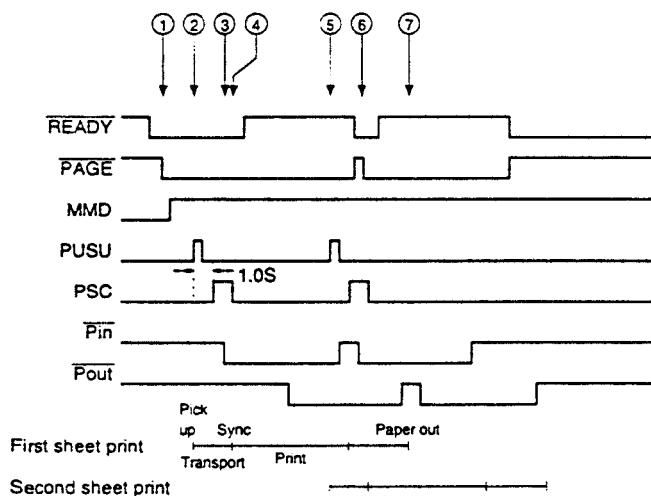
Fig. 7-2

1. When the machine receives a print request signal (PAGE) in the print ready mode, the main motor rotates to start the drive system.
2. When the main motor reaches a constant speed, the pick-up solenoid (PUSU) turns on to pick up a paper in the cassette. The paper is transported to the PS roller by the transport roller.
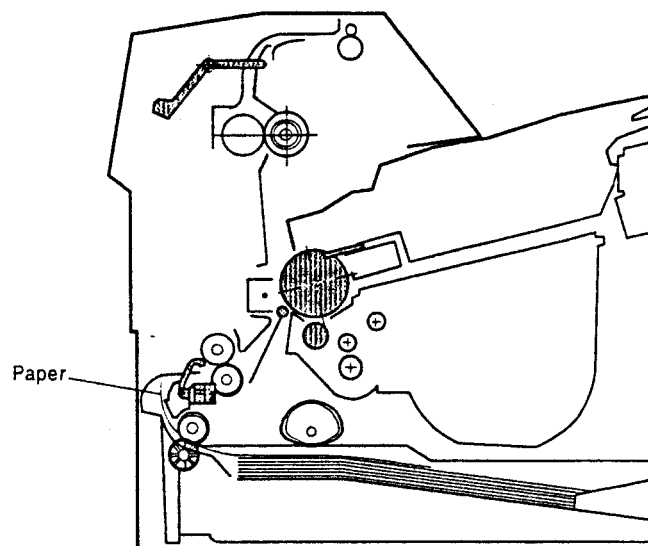
Fig. 7-3

3. After 1 sec of turning on of PUSU, PSC turns on (the PS roller stops) and the paper stops to make synchronization between the image lead edge and the paper lead edge.
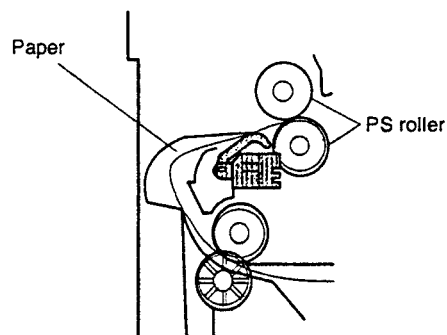
Fig. 7-4

4. PSC turns off (PS roller rotates) and the paper is transported through the transfer section to the fusing section.
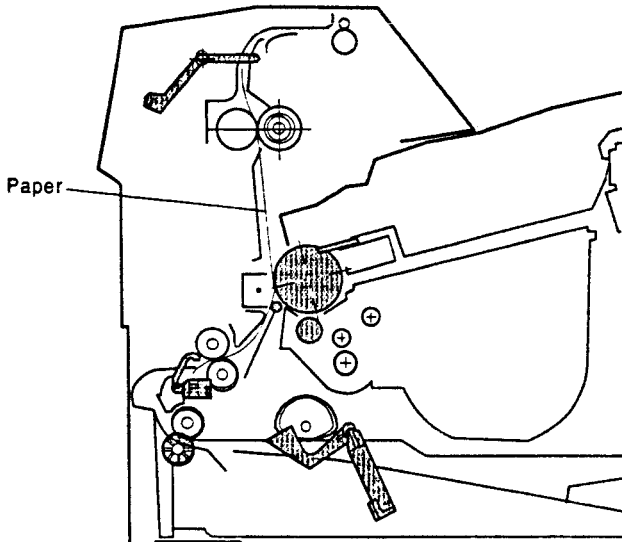
Fig. 7-5

Paper

5.6. PUSU turns on to pick up the second paper. If the first paper keeps turning on the PIN SW even after 1 sec of turning on of PUSU, The PSC is not turned on. (If the first paper remains, The PSC is turned on after 0.3 sec of turning off of the PIN SW.)

7. After transfer and fusing, the first paper is passed through POUT SW and discharged by the paper-out roller.

2. Print process section

Refer to [6] PRINT PROCESS.

3. Fusing section

After transfer, the toner image on the paper is fused on the paper by the heat and pressure of the heat roller.

Upper heat roller:	A teflon roller is used.
Lower heat roller:	A silicone rubber roller is used.
Roller cleaner:	Used for cleaning the heat roller.
Separation pawl:	Three pawls coated with teflon separate the paper from the heat roller.
Thermistor:	Used to detect the temperature of the upper heat roller.
Thermostat:	The contact opens when the fusing block temperature rises abnormally. (Hardware safety device)
Heater lamp:	The heater lamp employs nickel-chrome wire (570W).

Temperature control

Upper heat roller surface temperature monitored.

Heat roller heated by the heater lamp (the heater lamp turns on when the heat roller surface temperature is below 162 degrees centigrade).

(Heater trouble) Status indicated

Irregularly high temperature contact open (*)
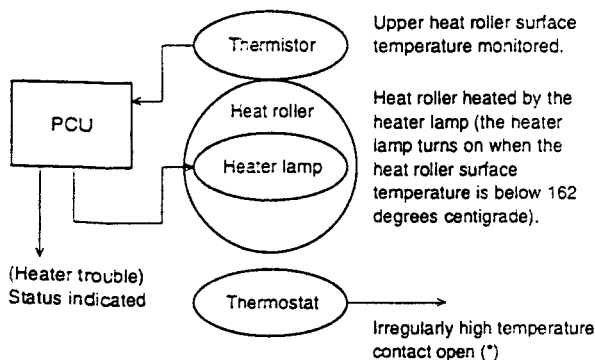
Fig. 7-6

Heater temperature control and heater trouble status

° Normal mode: 162°C
° Sleep mode: 100°C
° Irregularly high temperature (C4) 240°C
° Irregularly low temperature (C5) 85°C
° Open thermistor (C6)

4. Optical system

All the parts in the optical system (the laser diode, etc.) are assembled as a unit.

Note 1: Since the optical unit is replaced as a unit, never disassemble it.

Note 2: Since the optical unit base is open, be careful to keep it away from dust and not to scratch the lens.

4-1. General

A laser beam issued from the semiconductor laser diode in synchronization with the video signal is focused collaterally by means of the collimator. It is exposed to the polygonal mirror that keeps rotating at a given speed, and the laser beam scans in the main scan direction as the mirror rotates. The main scan laser beam enters the focus correction lens where it is collected and focused to reflect the beam on the drum. The point where write starts is the point where the laser beam coming out of the focus correction lens is reflected by the trigger mirror exposing the photodiode.

4-2. Major components

Block diagram
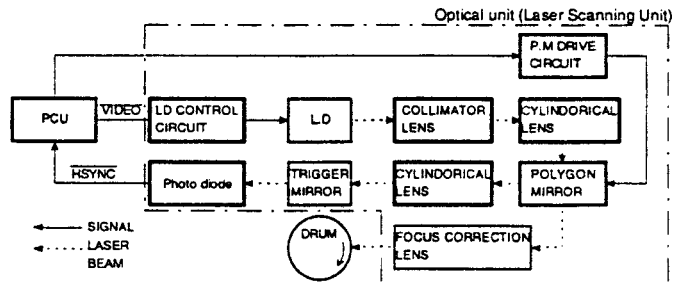
Fig. 7-7

| Light source	Semiconductor laser diode (780nm wavelength) Laser output control PWB (APC circuit)
Deflector	Polygonal mirror, scan motor, control circuit boad
Optics collimator	Focus correction lens, Collimator lens
Beam point detector	Pin diode Detect circuit board, Trigger mirror

Fig. 7-8

- 23 -
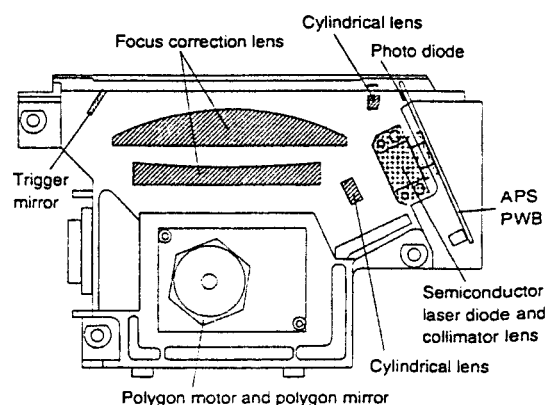
1-3. Upper cabinet disassembly

1. Remove the front cabinet. (Refer to 1-1)
2. Remove four screws which are fixing the upper cabinet.
3. Remove the Font card cover.
4. Remove the ICU unit
5. Pull out the upper cabinet upwards.

[Fig. 8-4]

Font card cover
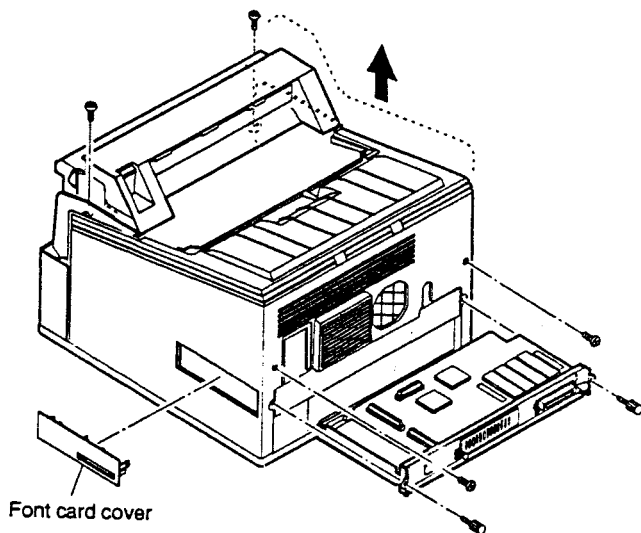
| Note for assembly |

1. When removing the upper cabinet, be careful not to damage the harness. (Arrange the harness so that it does not extrude from the upper frame.)
2. When attaching the upper cabinet, it is advisable to use adhesive tape to attach the cassette button.
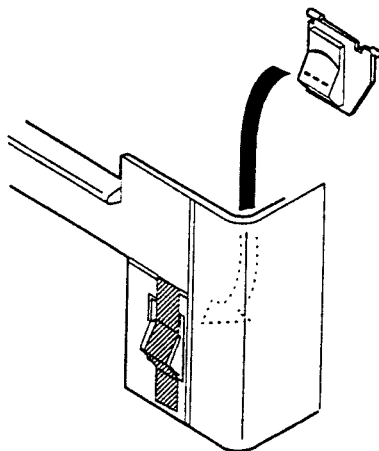
[Fig. 8-5]

1-4. Transport frame unit disassembly

1. Remove the front cabinet and the upper cabinet. (Refer to 1-1 and 1-3)
2. Remove the frame guide R. (2 screws)
3. Remove the harness holding sheet. (1 screw)
4. Disconnect the connector of the thermistor.

Frame guide R

Harness holding sheet
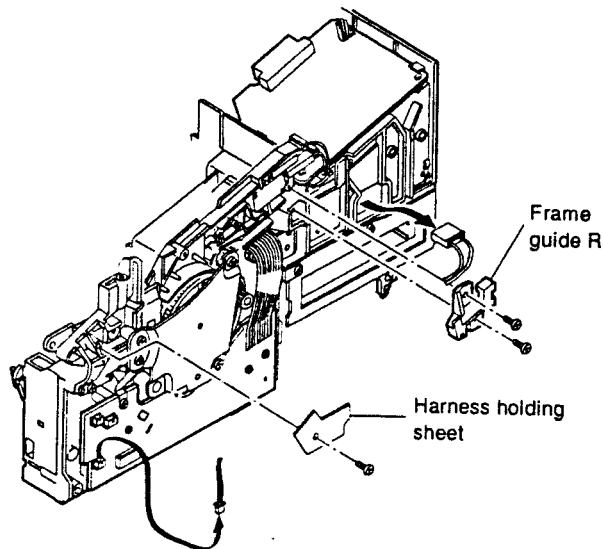
[Fig. 8-6]

5. Remove two positioning pins.
6. Remove the transport unit from the transport stopper and pull it out upwards.

Transport frame unit

Transport stopper

Positioning pins
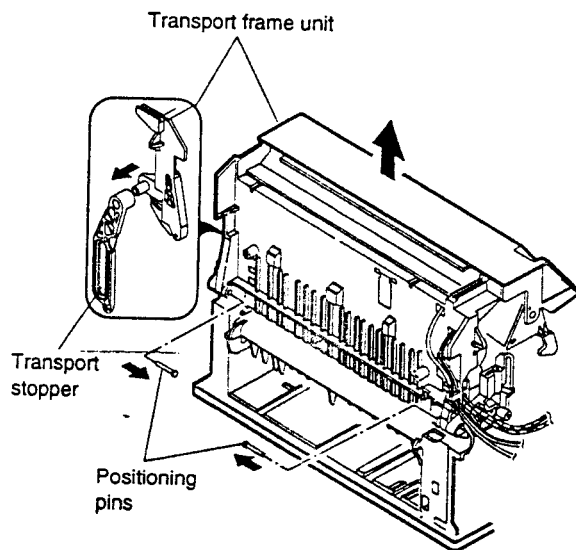
[Fig. 8-7]

[8] Disassembly, assembly and lubrication

1. Disassembly and assembly

CAUTION FOR SERVICING
NEVER TOUCH THE AC/DC POWER PWB WITH THE AC CORD CONNECTED TO THE POWER OUTLET. IT MAY CAUSE A DANGEROUS ELECTRIC SHOCK.

This section describes the disassembly and assembly procedure.
The descriptions include the following:

a. A description is given for disassembly, re-assembly should be done in the reverse sequence.
   Where specific caution is required, warnings are given.

b. Disassembly and re-assembly items include the units and/or parts which may require replacement during maintenance level. The following description shows these units or parts.

c. Describes the screws whose locations may be difficult to find, units or parts which must be removed in a specified order or require a special technique. The following description does not include the units or parts for which the re-assembly procedure is obvious.

d. The cable clamp etc. are excluded from the description unless it requires special attention. Location of such items must be checked before its removal from the machine.

e. Positions to be lubricated, see figures and descriptions.

f. The optical system unit must be replaced as a whole unit without disassembly.

g. All the disassembly procedures in this manual require disassembly of the front cabinet and the upper cabinet in advance.

1-1. Front cabinet disassembly

1. Remove the drum cartridge and the developer cartridge.

2. Remove the paper guide in front of the fuser. (4 screws)
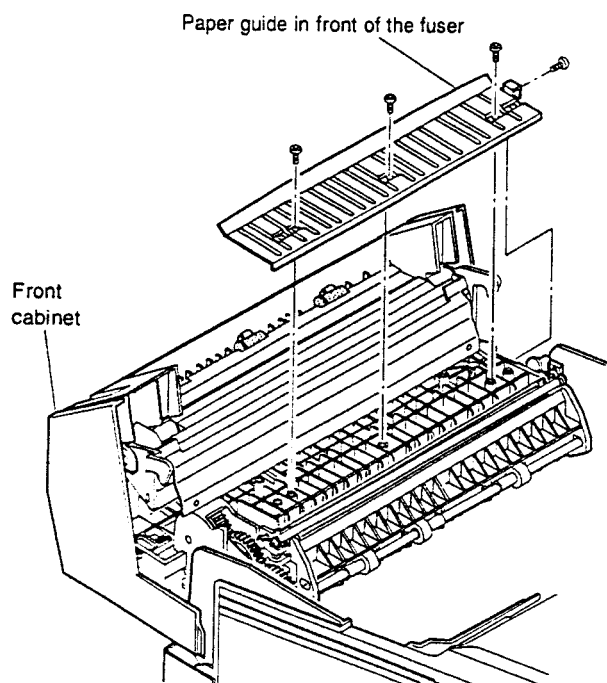
[Fig. 8-1]

3. Disengage three pawls which are fixing the front cabinet.

4. Remove the front cabinet and disconnect the connector.
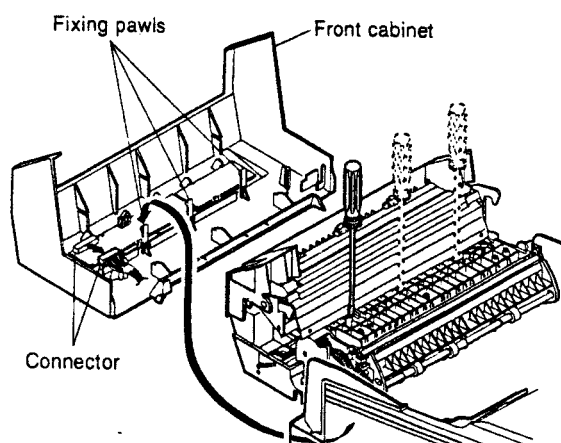
[Fig. 8-2]
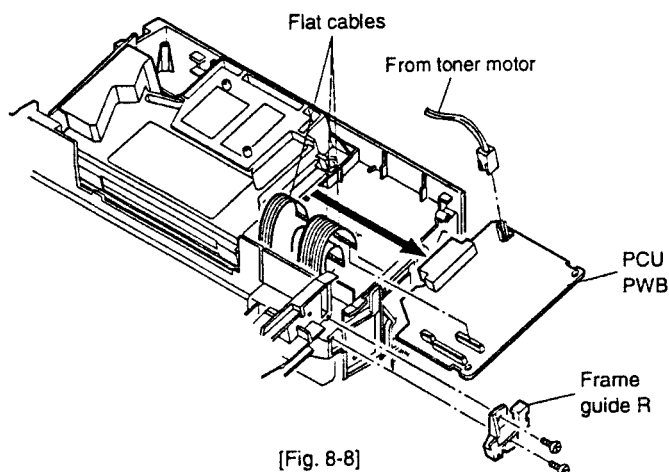
1-2. Operation panel unit disassembly

1. Remove the front cabinet.

2. Disengage five pawls which are fixing the panel PWB.
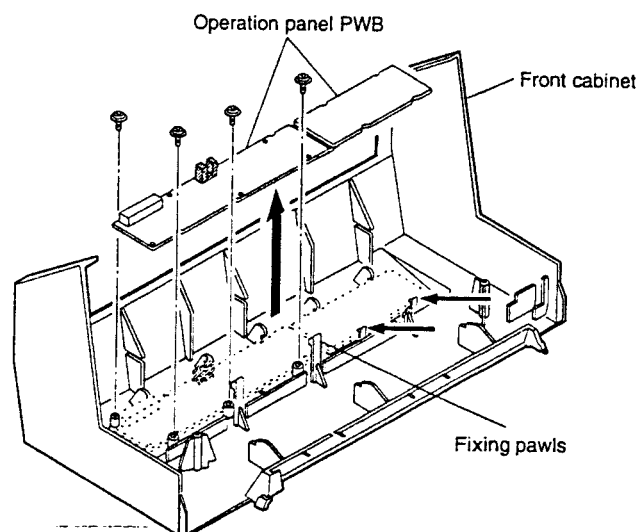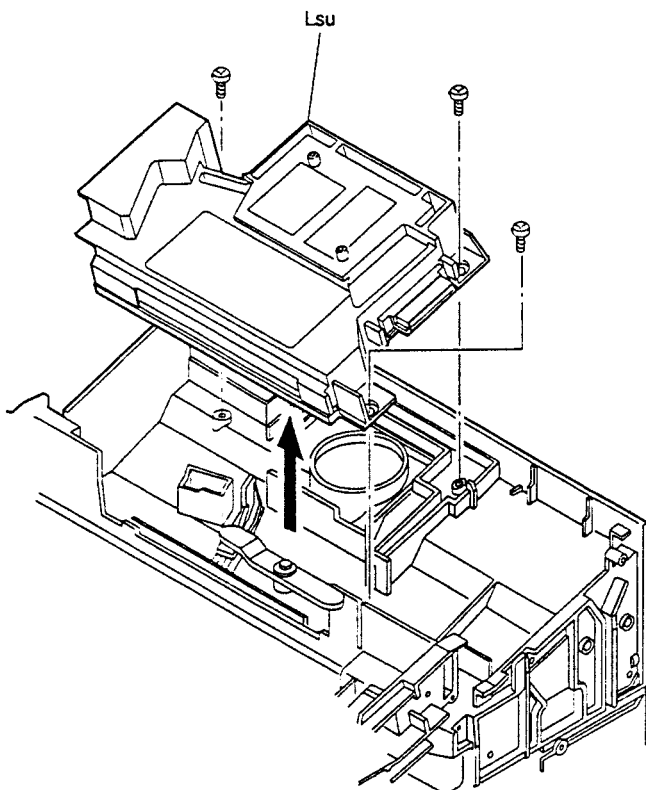

[Fig. 8-3]

1-5. PCU disassembly

1. Remove the front cabinet and the upper cabinet. (Refer to 1-1 and 1-3)

2. Remove the frame guide R. (2 screws)

3. Disconnect three flat cables and two connectors.

4. Slide PCU to the left (when viewed from the front) to remove it.

[Fig. 8-8]

1-6. LSU (optical unit) disassembly.

1. Remove the front cabinet and the upper cabinet. (Refer to 1-1 and 1-3)

2. Remove the PCU. (Refer to 1-5)
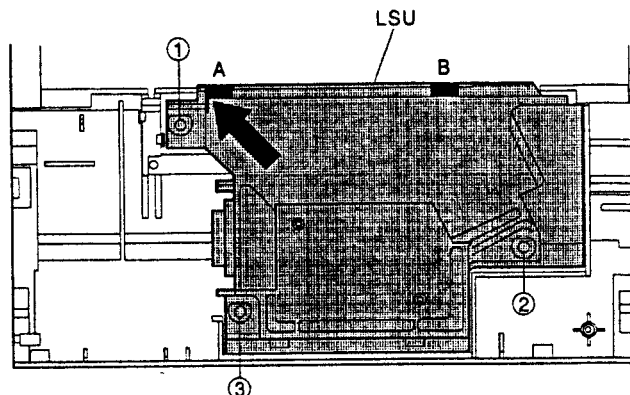
3. Remove three screws which are fixing the optical unit.

[Fig. 8-9]

Note 1: The bottom of the optical unit is open. Do not touch the bottom surface. Place it on a flat surface. Be careful not to allow dust to enter the unit.

Note 2: Never disassemble the optical unit.

Note 3: Do not operate the machine with the optical unit disassembled.

Reassembly   For reassembly of the optical unit, follow the procedure below:

1. Fit the unit with corner A and press in direction B.

2. Fix the unit with screws. (Tighten screws in the sequence of ①, ②, and ③.

[Fig. 8-10]

1-7. Drive unit disassembly

1. Remove the front cabinet and the upper cabinet. (Refer to 1-1 and 1-3)

2. Remove three screws which are fixing the gear fixing plate.

3. Remove the gear fixing plate ass'y.

4. Remove four screws which are fixing the drive unit.

5. Slide the drive unit to the right (when viewed from the front) to remove.
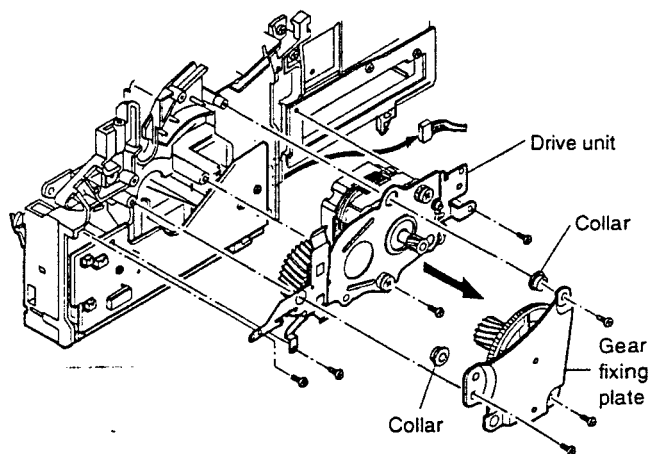
[Fig. 8-11]

∗ The collars are provided to protect the harness. Be careful to observe the correct direction when installing the collars.

## 1-8. MD (Motor Drive) PWB disassembly

1. Remove the drive unit. (Refer to 1-7)

2. Remove the screw which is fixing the PWB chassis, and slide the PWB chassis. (Refer to 1-23.)

3. Remove two terminals of the safety switch.

4. Pull out the flat cable.

5. Slide the MD PWB to the right (when viewed from the front) to remove.

Safety switch

Frame guide R

MD PWB
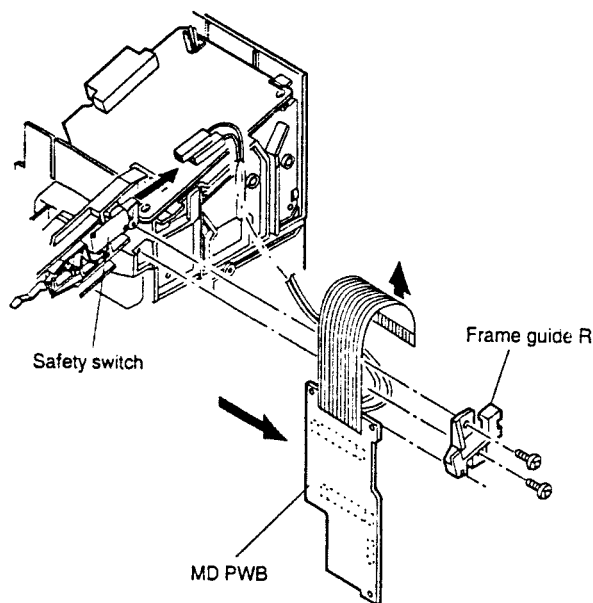
[Fig. 8-12]

## 1-9. Bottom unit (lower cassette section) disassembly

1. Remove the upper cabinet and the front cabinet. (Refer to 1-1 and 1-3)

2. Remove four screws which are fixing the bottom unit.

3. Disengage two pawls of the bottom and remove the bottom unit.

✱ Be careful not to break the pawl.

Front cabinet

Upper cabinet

Bottom unit

Fixing pawls
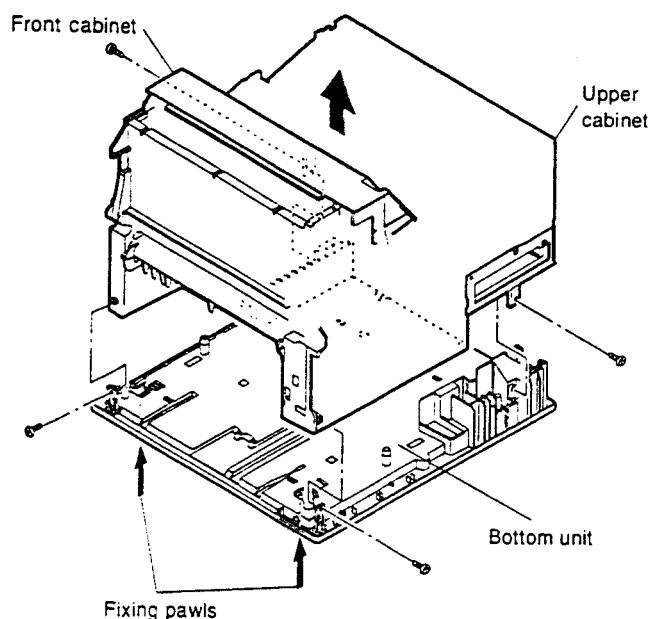
[Fig. 8-13]

1-10. Cassette PWB (CS PWB) disassembly

1. Remove the front cabinet, the upper cabinet, and the bottom unit. (Refer to 1-1, 1-3 and 1-9)

2. Disconnect three connectors.

3. Remove three screws which are fixing the PWB and remove it.
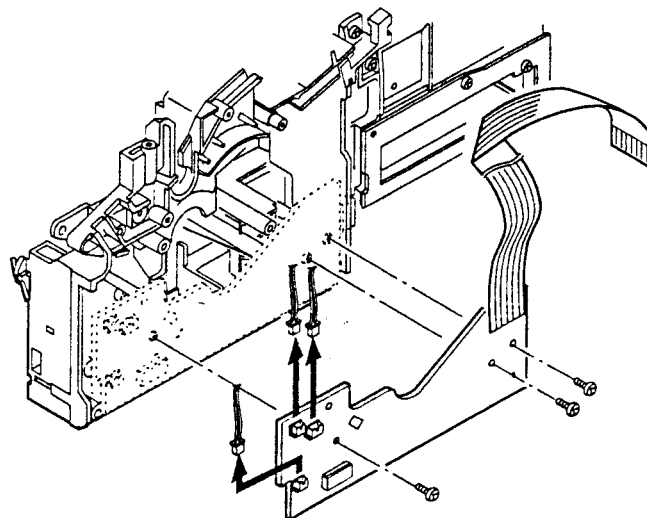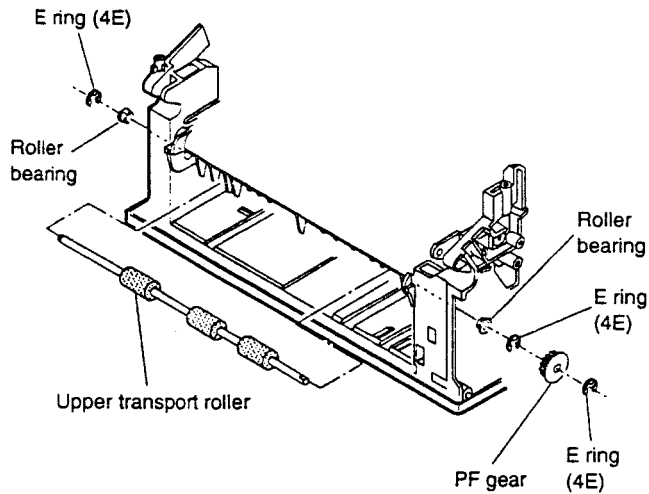
[Fig. 8-14]

1-11. PS roller disassembly

1. Remove the drive unit. (Refer to 1-7)

2. Remove the electromagnetic clutch (PS clutch).

3. Remove two screws which are fixing the PF guide.

4. Remove the PF guide and the PS grounding plate simultaneously.

5. Pull up the PS roller to remove.

PF guide

PS roller

Paper stop clutch

Harness fixing sheet

PS grounding plate
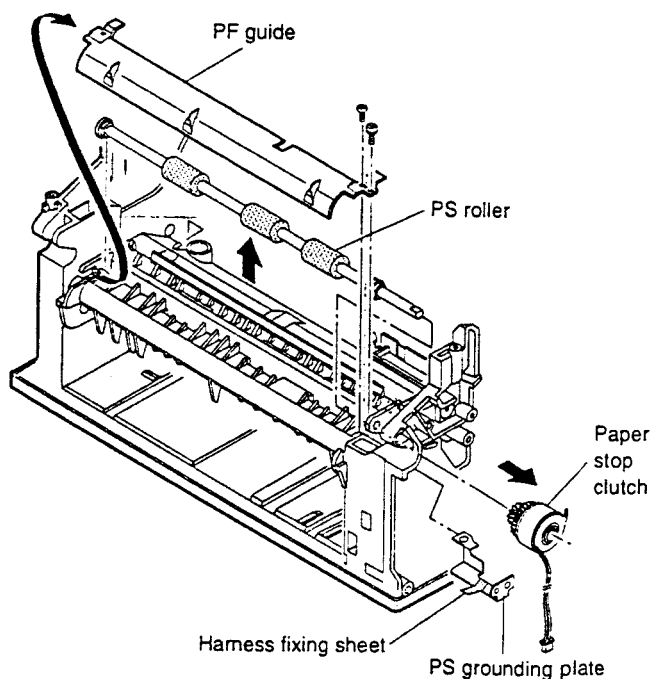
[Fig. 8-15]

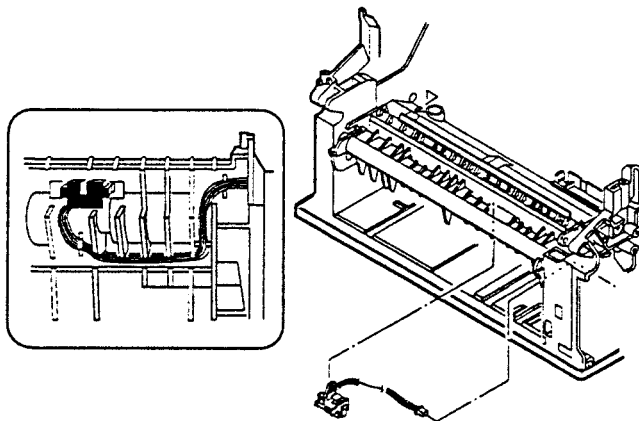## 1-12. Upper transport roller and PIN sensor disassembly

1. Remove the drive unit. (Rfer to 1-7)

2. Remove the right and the left E rings, and remove the PF gear.

3. Remove the right and the left roller bearings.

   Note: The bearings are identified by their colors. The right bearing : Black
   The left bearing: White

4. Remove the roller.

(Reference) The lower transport roller can be removed in the same manner.

[Fig. 8-16]

   Note: Since the right bearing is grounded, check to confirm that the grounding spring and the bearing are in contact when assembled.

5. Remove the PIN sensor pawl and remove the PIN sensor.
   When attaching the PIN sensor, process the lead wire properly.

[Fig. 8-17]

1-13. Paper feed roller (pickup) upper disassembly

1. Remove the drive unit. (Refer to 1-7)

2. Remove E-ring (4E) and remove the paper feed clutch (spring clutch).

3. Remove the right and the left E-rings and remove the bearing.

   Note 1: The bearings are identified with their colors.
   The right bearing: Black
   The left bearing: White

4. Remove the paper feed roller.

(Reference) The lower paper feed roller can be removed in the same manner.
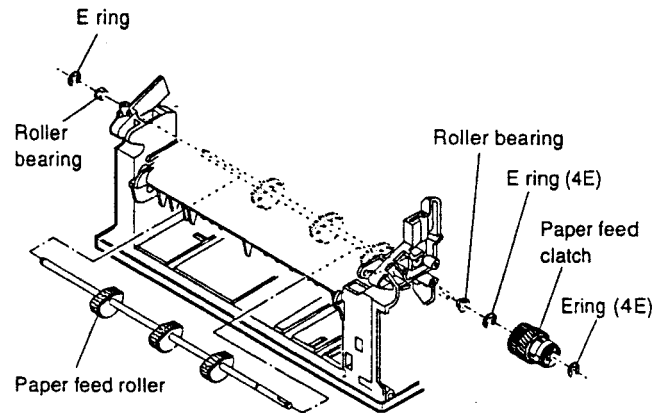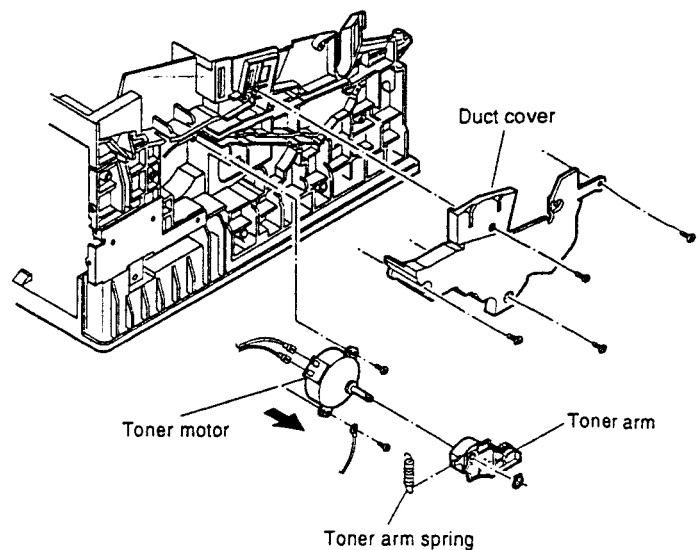

[Fig. 8-18]

   Note 2: Since the right bearing is grounded, check to confirm that the grounding spring and the bearing are in contact when assembled.

1-14. Toner motor disassembly

1. Remove the drive unit. (Refer to 1-7)

2. Remove the duct cover

3. Remove the toner arm spring.

4. Remove two screws which are fixing the toner motor, and remove the toner motor.

[Fig. 8-19]

1-15. DV sensor PWB disassembly

1. Remove the drive unit. (Refer to 1-7)

2. Disconnect the cable from the PCU PWB connector (CN103).

3. Remove the screw which is fixing the DV sensor PWB and remove the PWB.
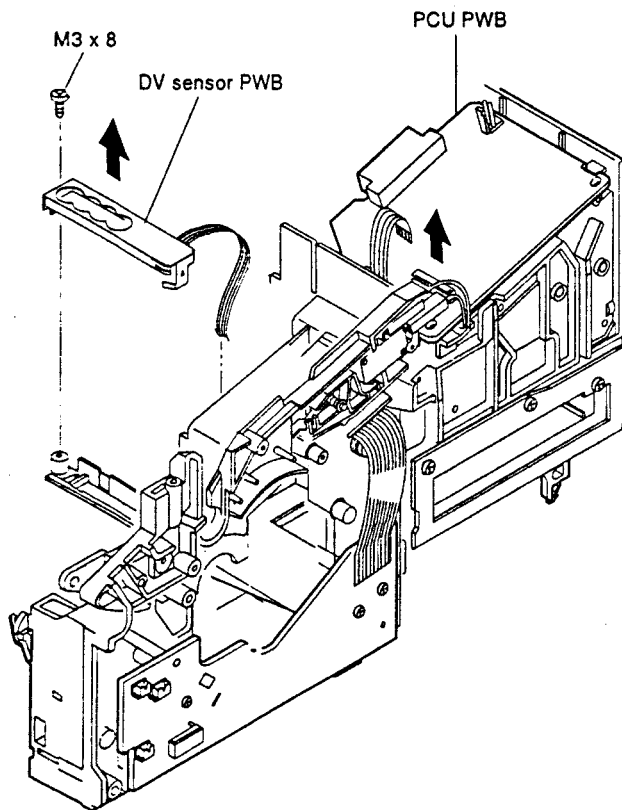
[Fig. 8-20]

Note: When assembling the sensor PWB, be careful of the wiring.
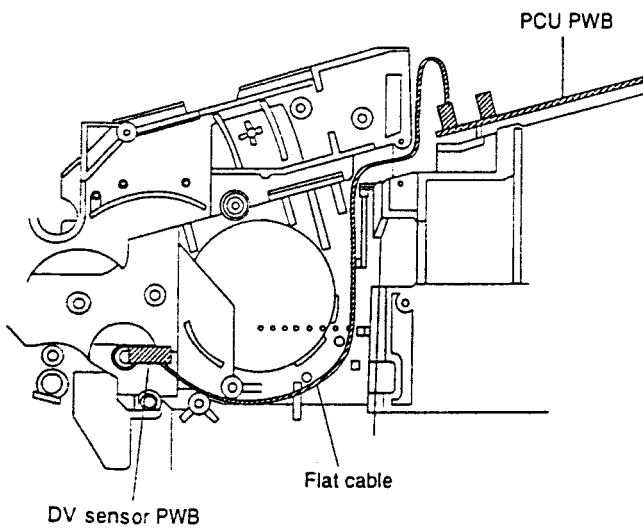
[Fig. 8-21]

1-16. Transfer charge wire replacement procedure

(Disassembly)

1. Remove the drum cartridge and the DV cartridge.

2. Open the transport unit and remove the guide roller from the guide arm.

[Fig. 8-22]

3. Remove the fixing screw of TC terminal spring A, and remove TC terminal spring A together with the wire.

4. Disconnect the other end of the wire terminal from the transport frame.

[Fig. 8-23]

- 29 -
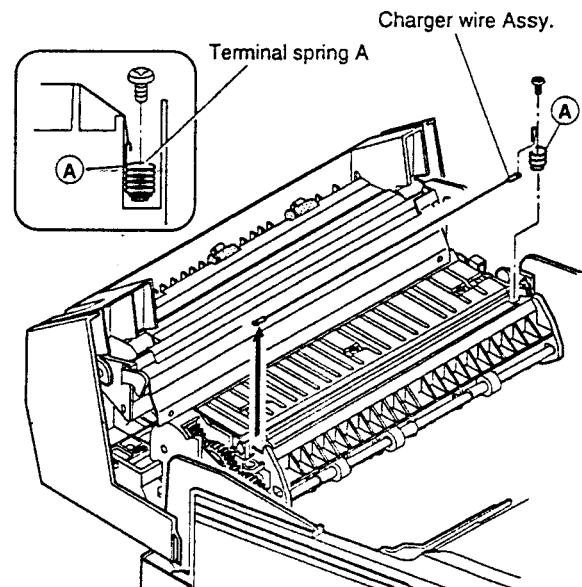
5. Remove TC terminal spring A from the wire.

(Assembly)

Note: When attaching the wire, hold the both terminals of the wire.

1. Engage one end of the charger wire Assy terminal with the boss of the transport frame.

2. Hang TC terminal spring A on the other end of the charger wire Assy.
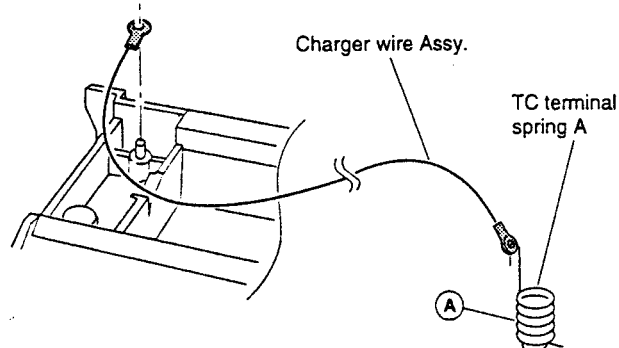
[Fig. 8-24]

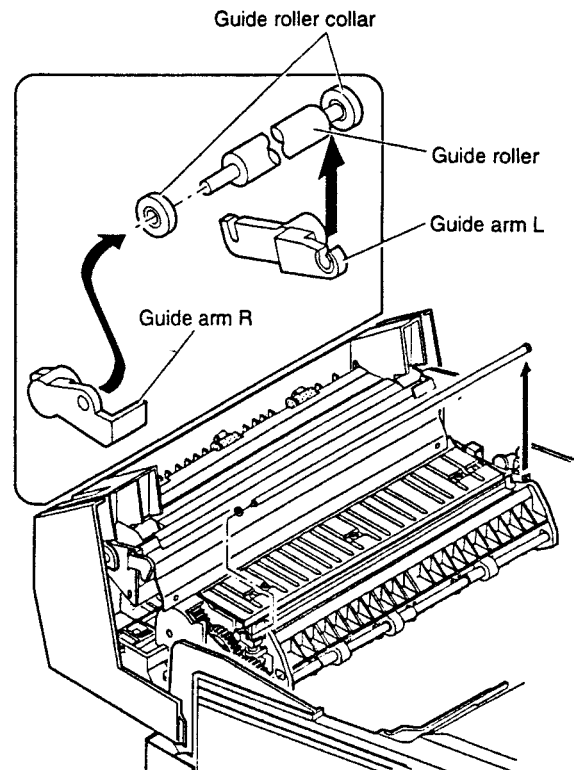3. Put the wire along the V-groove in the frame and tighten TC terminal spring A together with TC spring B with M2.6 screw.
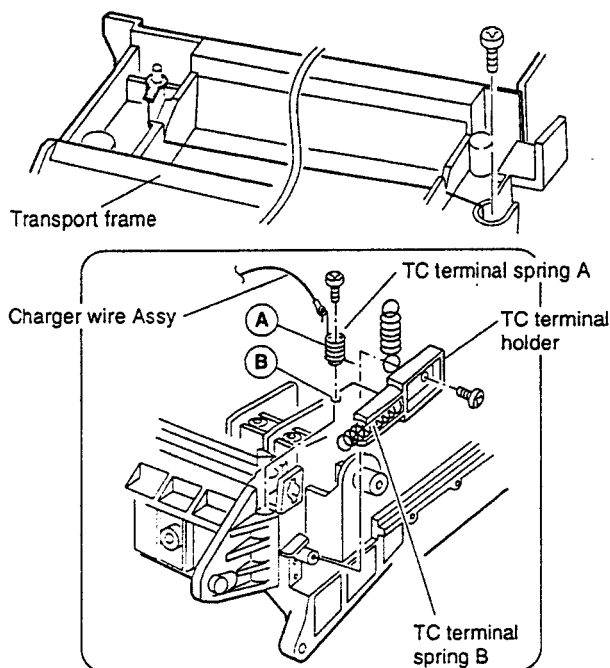
[Fig. 8-25]

4. Attach the guide roller to the guide arm. (Put the left-side collar to the outside of the guide arm L.)
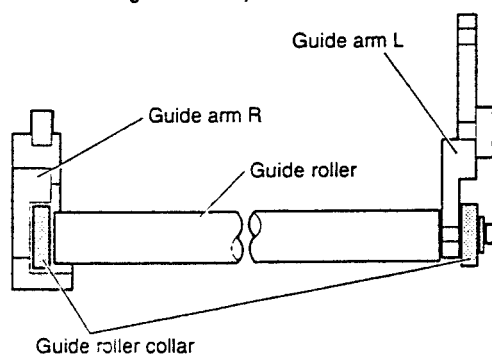
[Fig. 8-26]

Note:

° Do not fold the wire.

° Do not touch the wire (printing area) with bare hand.

° Be sure to place the wire securely in the V-groove in the frame.
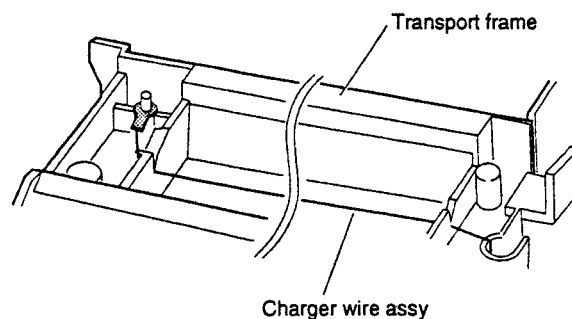
[Fig. 8-27]

1-17. Heater lamp replacement

1. Remove the front cabinet and the upper cabinet. (Refer to 8-1-1 and 8-1-3)

2. Remove the E-ring (E5) which is fixing the paper exit guide ass'y by sliding the fulcrum shaft.

3. Remove the paper exit guide ass'y.

4. Remove the fuser cover spring and remove the fuser cover.
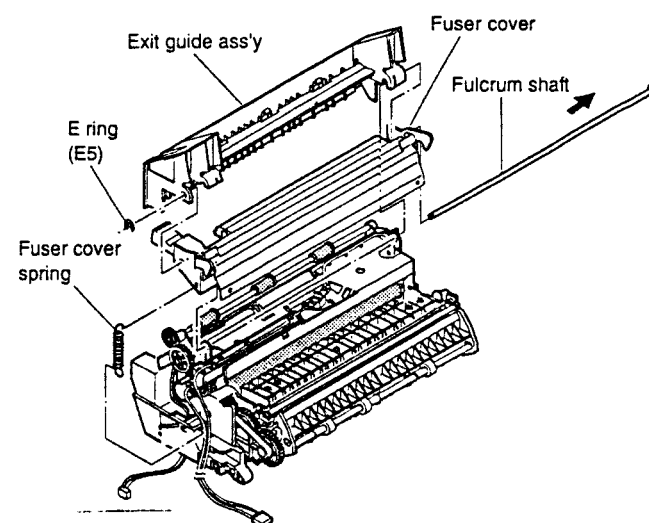
[Fig. 8-28]

5. Disconnect the heater fasten terminal from the thermostat.

6. Remove the heater lamp holder, and heater lamp spring.

7. Slide the heater lamp to the right when viewed from the front to remove.

✱ When removing the heater lamp, do not pull the lead wire. (The nickel-chrome wire may be extended.)
Hold the insulator and the glass to pull.
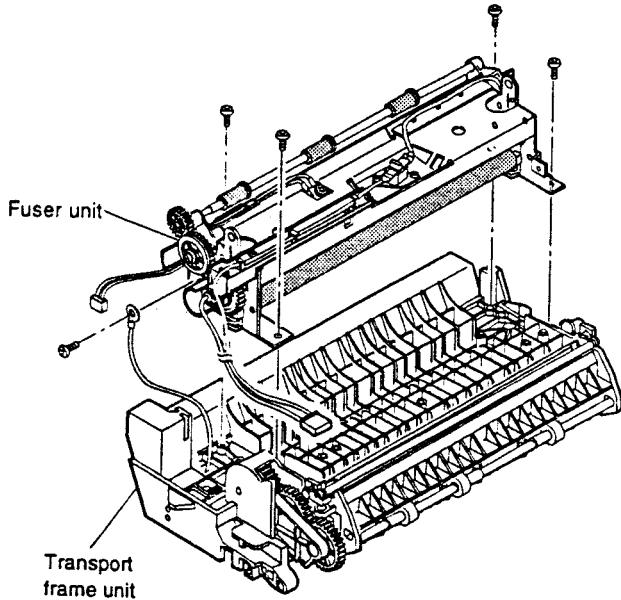
[Fig. 8-29]

6. Remove the harness holding sheet (one screw) and the guide frame R (two screws).

7. Disconnect the connector from the power unit.
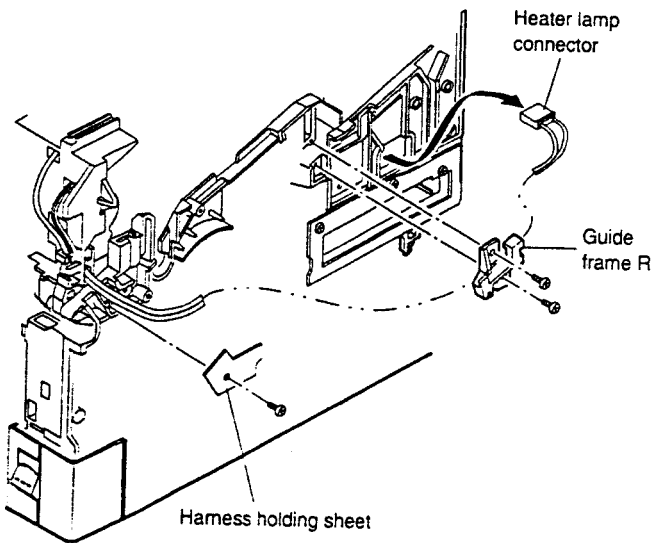
[Fig. 8-30]

Note: When assembling the lamp, be careful of the harness wiring.

1-18. Fuser unit disassembly

1. Remove the front cabinet, the upper cabinet, and the transport frame unit. (Refer to 1-1, 1-3 and 1-4)

2. Remove the four screws which are fixing the fuser unit.

3. Remove the screw for GND harness.

4. Cut the band which fixes the thermistor lead with to the transport frame.

5. Remove the harness holding sheet and the guide frame R.
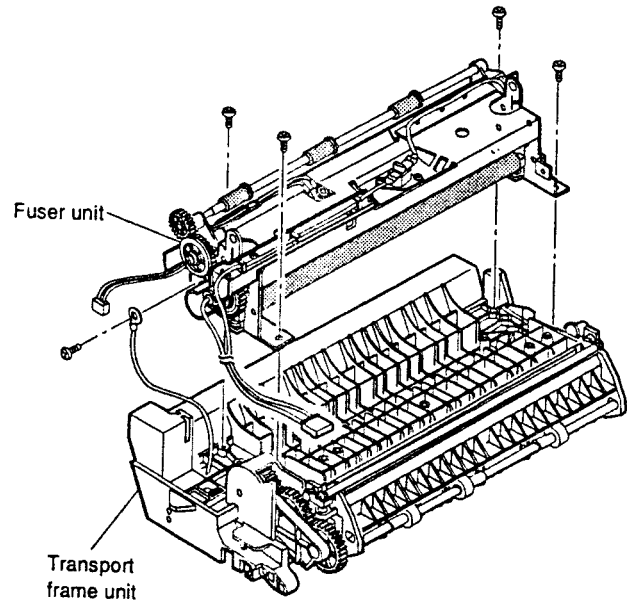
[Fig. 8-31]

1-19. Thermistor replacement

1. Remove the fuser unit. (Refer to 1-18)

2. Remove the screw which is fixing the thermistor and remove the thermistor.
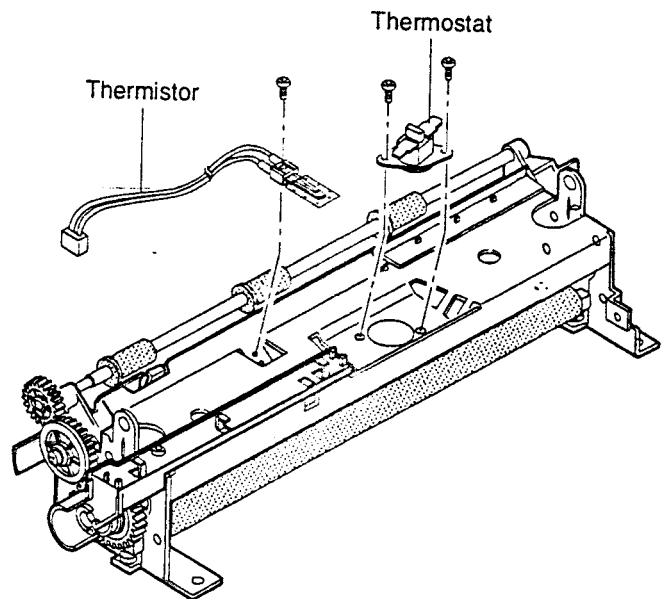
[Fig. 8-32]

Note 1: For assembly of the thermistor, refer to the figure below and check that the thermistor is in contact with the heat roller.
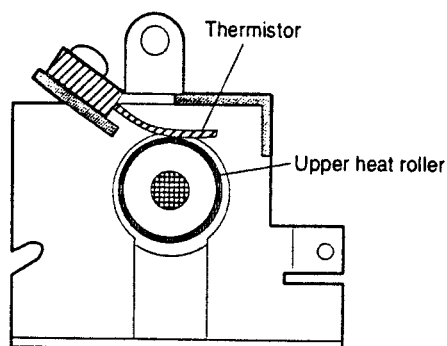
[Fig. 8-33]

Note 2: Place the thermistor so that the positioning projection is on the lower side.

Note 3: For wiring of the thermistor harness, remove slack in the harness and fix with the binding band. Be careful not to allow the harness to contact the paper exit roller and the gears.
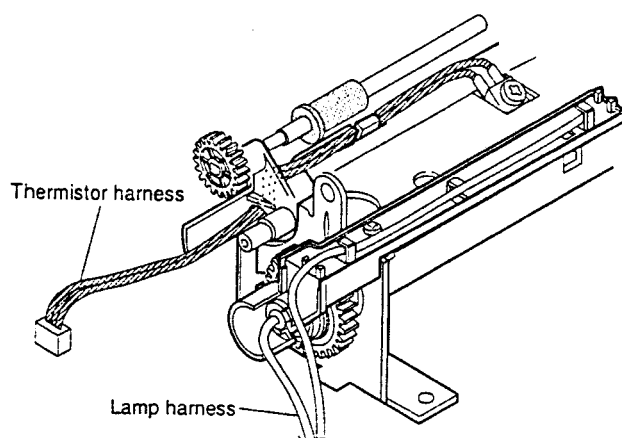
[Fig. 8-34]

1-20. Thermostat replacement

1. Remove the fuser unit. (Refer to 1-18)

2. Remove two screws which are fixing the thermostat, and remove the thermostat.
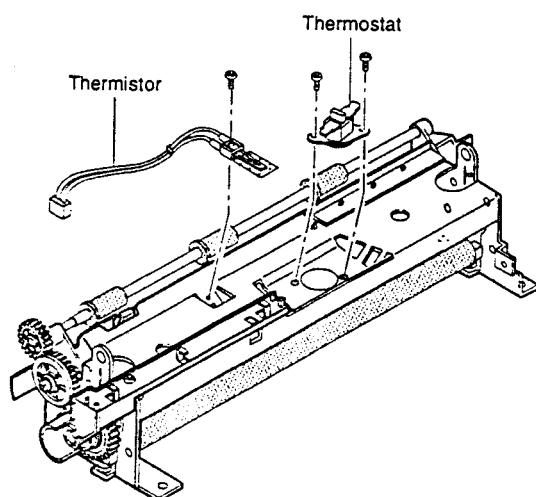
[Fig. 8-35]

Note: When assembling, check that the clearance between the thermostat and the heat roller is 0.75 ±0.25mm.

1-21. Heat roller disassembly

1. Remove the fuser unit. (Refer to 1-18)

2. Remove the heater lamp. (Refer to 1-17)

3. Remove the idler gear and heat roller gear.

4. Remove the heater cover.

5. Use the heat roller replacement jig to release the pressure. Remove the thermistor and the thermostat.

6. Remove two C-rings (one in the right and one the left).
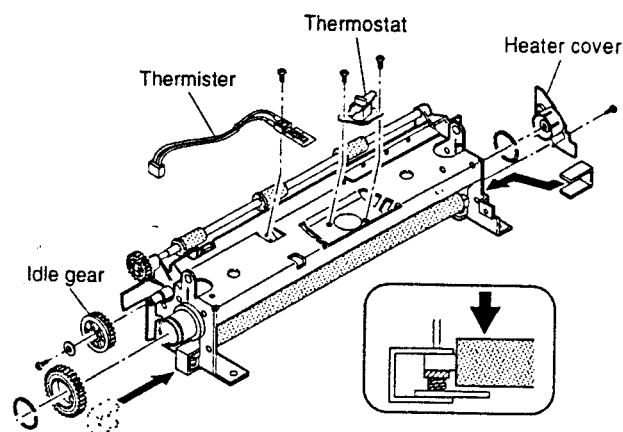
[Fig. 8-36]

7. Remove the bearings (one in the right and one in the left).

8. Remove the upper heat roller.
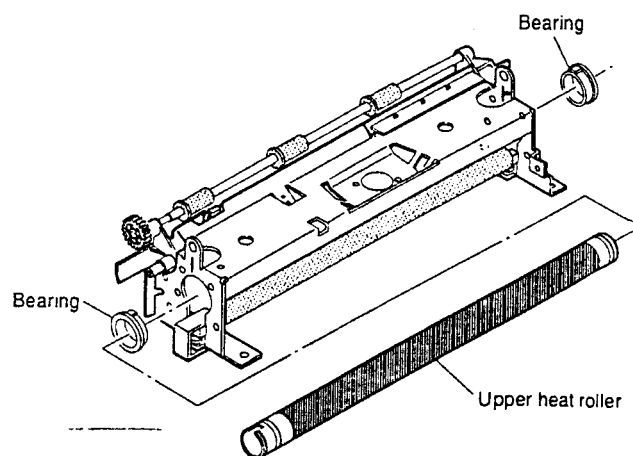
[Fig. 8-37]

9. Remove the lower heat roller.
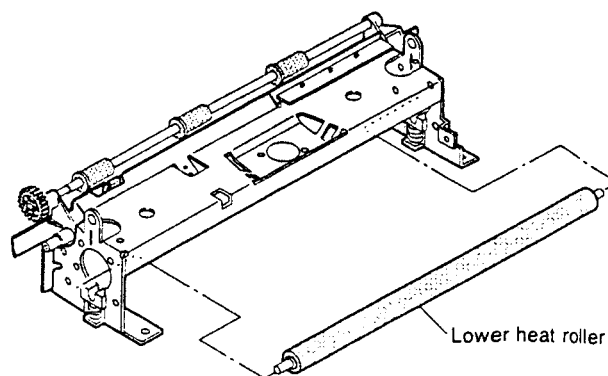
[Fig. 8-38]

1-22. Fusing separation pawl disassembly

1. Remove the fuser unit. (Refer to 1-18)

2. Remove two screws which are fixing the separation pawl holder.

3. Slide the separation pawl first to the left when viewed from the front, and disengage the right side.

4. Remove the separation pawl.
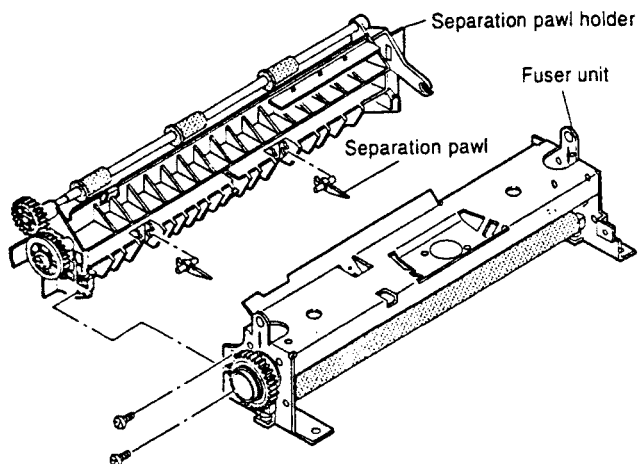
[Fig. 8-39]

1-23. Power PWB and high voltage PWB disassembly

1. Remove the front cabinet and the upper cabinet. (Refer to 1-1 and 1-3)

2. Remove the duct cover.

3. Remove the high voltage unit cable (red one).

4. Remove the screws (3 in the right, 1 in the left) which are fixing the bottom plate, and pull out the power chassis.
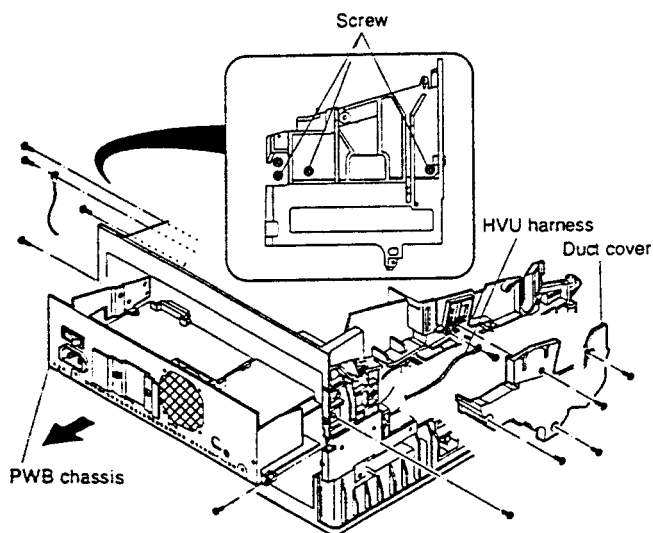
[Fig. 8-40]

1-24. Fan disassembly

1. Remove the power unit. (Refer to 1-23)

2. Remove the screw which is fixing the fan, and remove the fan.

Reassembly: To reassemble the fan, follow the instruction shown in the figure below. (Note the direction of air flow.)
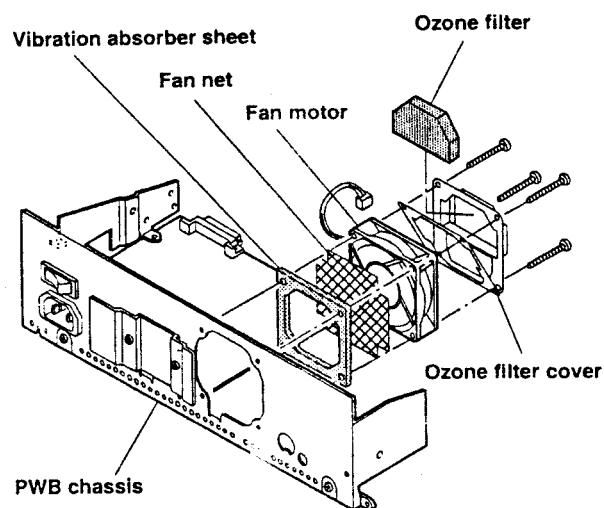
[Fig. 8-41]

2. Lubrication

When disassembling/reassembling or replacing parts, the following sections should be greased.

Note 1: Apply white Molykote grease (UKOG-0158FCZZ, Price rank: AU) to the gear teeth and the shaft surface.

Note 2: To the positions indicated with ✕, apply BR-2. PLUS grease (UKOG-0062FCZZ, price rank: AS).

2-1. Fuser section
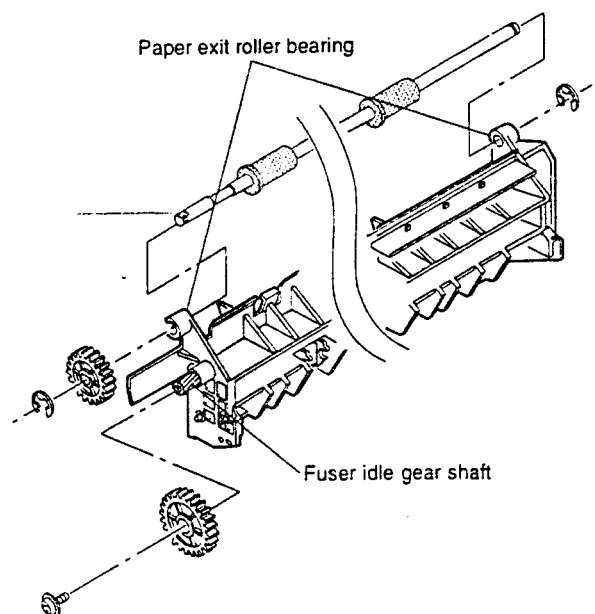
[Fig. 8-42]

2-2. Transport section

Gear shaft surface
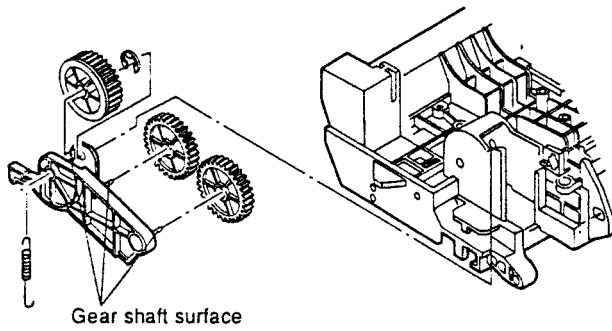
[Fig. 8-43]

2-3. Toner motor section

* Toner arm and gear shaft surfaces
  Apply BR-2. PLUS grease
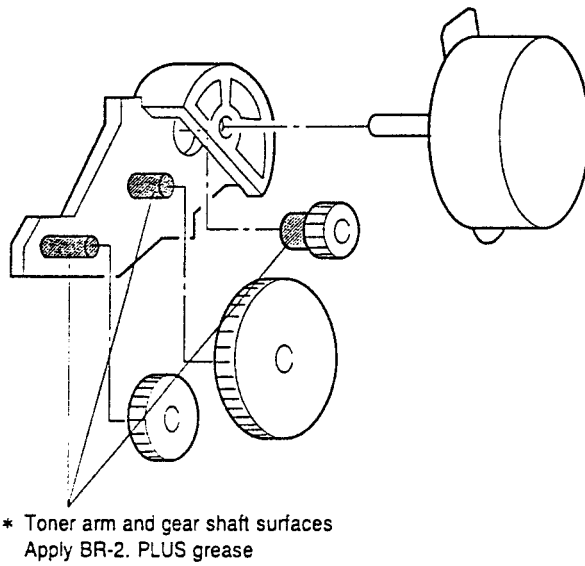
[Fig. 8-44]

2-4. Drive unit section

35T helical gear/30T gear shaft surfaces

[Fig. 8-45]

144T gear and 54/24T gear
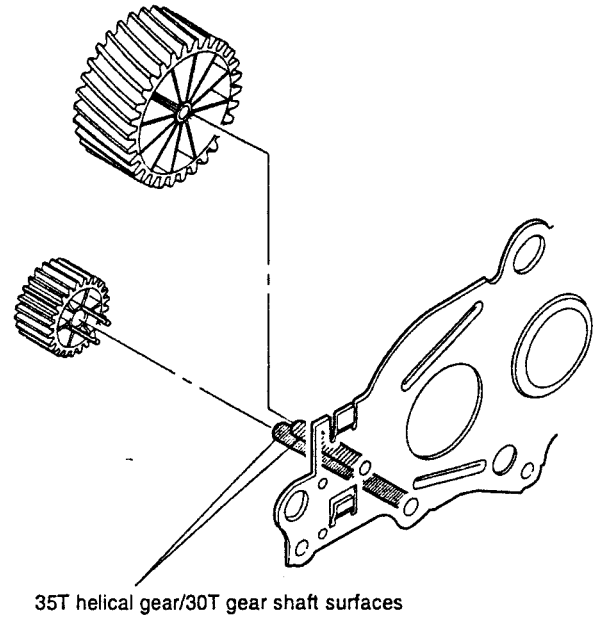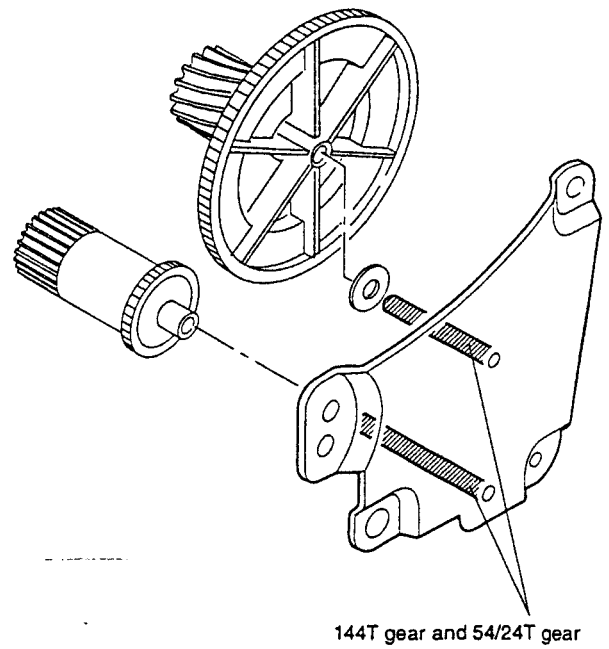
[Fig. 8-46]

2-5. Paper feed section

1. Apply grease to the surface of the pickup roller shaft and the transport roller shaft.

2. Apply grease to the inside of each roller bearing.

3. Apply grease to the surface of each gear shaft.

4. Apply BR-2. PLUS grease to the spring clutch gear section.

* Apply BR-2. PLUS grease.
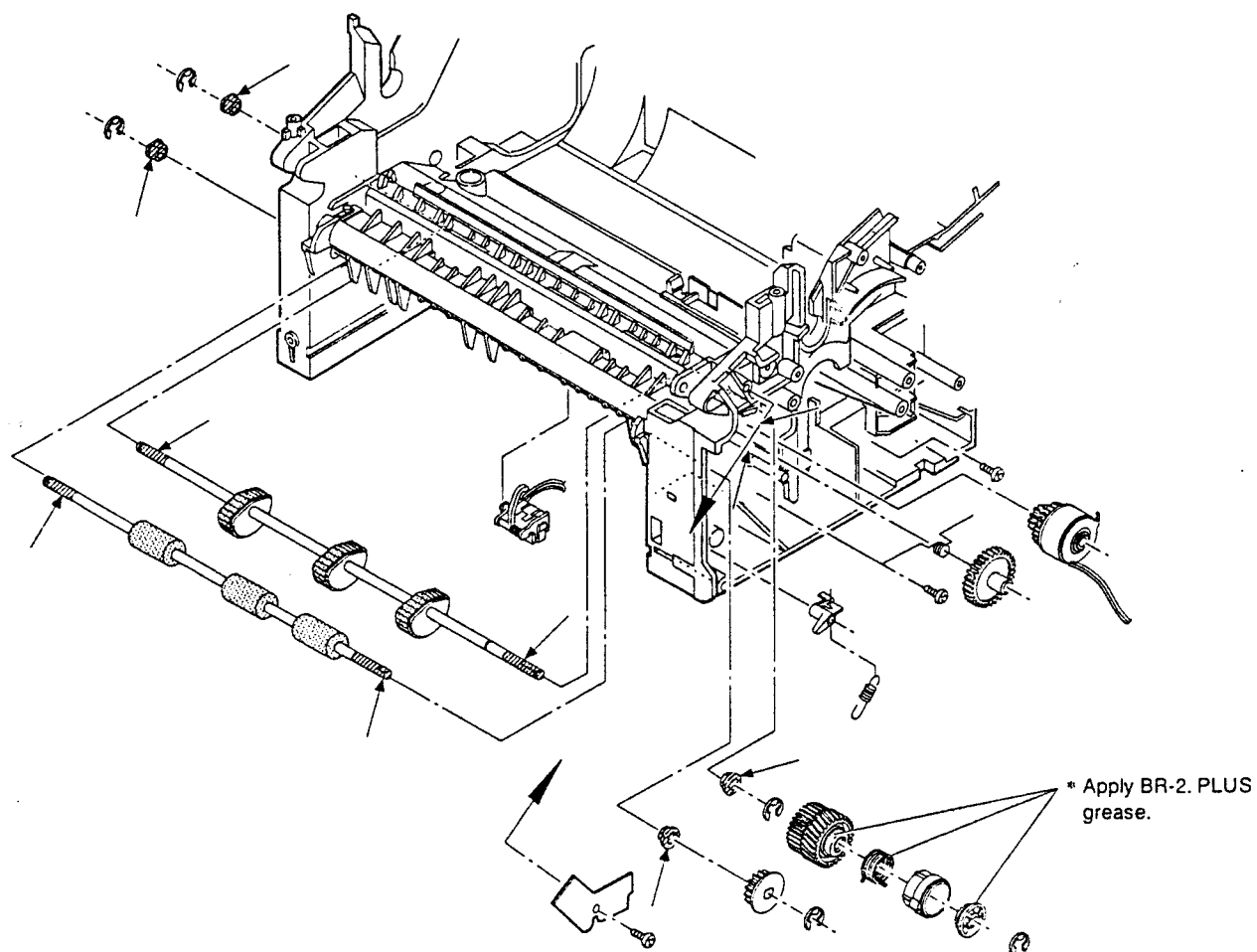
[Fig. 8-47]

[9] ADJUSTMENTS

1. Top margin and left margin adjustments

Top margin and left margin should be adjusted in the following cases:
1. When the margin differs from the reference value.

2. When EE-PROM is replaced.

3. When ICU is replaced.

4. When the optical unit (LSU) is replaced.

(1) Reference value

(Top margin)

$$5.08 \,{}^{+2.0}_{-1.0} \text{ mm}$$

Fig. 9-1

(Left margin)

$$4.23 \pm 2.0 \text{mm}$$
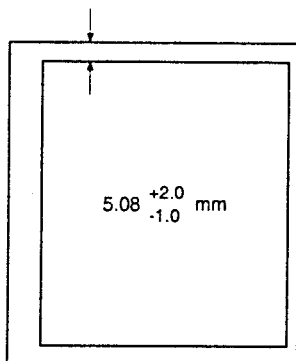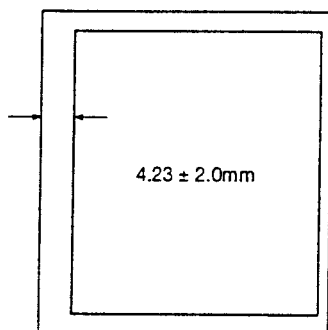
Fig. 9-2

(2) Adjustment procedures

① With the [LINE] key and the [FONT] key pressed, turn on the power.

② The display will indicates [TOP MARGIN = XX].
"XX" is the currently set value.

③ Change the set value with [△] and [▽] keys. (Within the range of 38 to 98)

• When the top margin is greater than the reference value:
Use [▽] key to reduce the top margin. (Min. 38)

• When the top margin is smaller than the reference value:
Use [△] key to increase the top margin. (Max. 98)
Note: Change in 1 count corresponds to 4/300 = 0.34mm.

④ Press the [MENU] key.

⑤ The display will indicate [LEFT MARGIN = XX]. "XX" is the currently set value.

• Then press [FORM FEED] key, and the machine will go into the ON LINE mode.

⑥ Repeat procedure ③ to adjust the value.

⑦ Press the [ENTER] key. (When the [MENU] key is pressed, the process returns to ②.)

⑧ The data lamp lights up and the machine goes into the off-line state. Test print #2 is automatically performed. (One sheet of print is obtained.)

• Then the display returns to the state of ②.

⑨ For readjustment, perform procedures from ②.

[10] TEST PRINT AND DIAGNOSTICS

The base engine conditions can be checked with the following test print and PCU diagnostics.

• Test print
When the TEST key on the operation panel is depressed until SELF TEST #2 is displayed, the controller prints part of the built-in fonts diagonally.

• PCU diagnostics
The PCU diagnostics are provided for the service engineers to check the conditions of each section of the base engine.

PCU DIAGNOSTICS SPECIFICATIONS

1. Entering the DIAGNOSTIC mode

Keep the MENU and ENTER keys depressed, turn on the power switch.

2. Executing DIAGNOSTIC function

Select the menu with the MENU and $\triangle, \triangledown$ keys, and execute diagnostic function with FORM FEED keys.
To return to the menu during execution of diag function, press the RESET key.

3. DIAGNOSTIC display

When the machine enters into DIAG mode:

1. All LED's are lighted for 0.5 sec.

2. "PCU DIAG MODE X" is displayed. (X: PCU ROM version)

When diagnostic is being executed:

DATA LED is blinks.

| Reference |

When the front cabinet is removed, the actuator of the paper out sensor is disassembled to disable the operation. In this case, insertion of a paper into the slit in the photo sensor allows the operation. Paper pass operation, however, cannot be performed.

4. List of the functions

Menu	Function	Execution	Cancel
`PCU DIAG MODE #`	"#" shows a ROM version. This menu shows only a ROM version and does not perform any operation.	—	Power off
`SW SCAN XX`	Shows the internal switch state with LED. XX is a figure from 01 to 03. (Varied with △ and ▽ keys.) The contents are as shown below. Performed with the FORM FEED key. During operation, XX of the LCD blinks. During operation, △ and ▽ keys are disabled. LED lights up or goes off according to each switch. See table below. LED lights up by pressing the switches in sequence. See table below.	[FORM FEED]	[RESET]
`OPTICAL SYS TEST`	Laser test is performed. Pressing the FORM FEED key performs the operation. During operation, DATA LED blinks. LED of on-line lights for 60ms every time when SYNC- is detected.	[FORM FEED]	[RESET]
`VOL TEST XXX`	Performs the test of high voltage section. XXX is MCH, MCL, or TC. They are displayed in sequence with △ and ▽ keys. The FORM FEED key performs the operation. During operation, DATA LED blinks. The contents are as shown below: During operation, △ and ▽ keys are disabled. After 30 sec, The test is automatically cancelled. RESET key can also cancel the mode.	[FORM FEED]	After 30 sec of ON or [RESET]

SW SCAN — LED lights up or goes off according to each switch:

XX	LED ERROR	MANUAL	DATA	ON LINE
01	DOOR OPEN	PIN	POUT	—
02	PEU	CS1U	CS2U	CS3U

SW SCAN — LED lights up by pressing the switches in sequence:

XX	SEQUENCE	LED
03	PEU → CS1U → CS2U → CS3U	MANUAL

VOL TEST contents:

XXX	MC	GB	BS	TC
MCH	ON	HIGH	ON	OFF
MCL	ON	LOW	ON	OFF
TC	ON	HIGH	ON	ON

MC : Main charge
GB : Grid bias
BS : DV bias
TC : Transfer charge

Menu	Function	Execution	Cancel
TEST PRINT	Performs print test. The FORM FEED key performs the operation. During the operation, DATA LED blinks. During the operation, the number of sheets printed and the analog value of toner and heater are displayed. To cancel the test print, press the RESET key. During printing, cancellation is held and after printing, cancellation is performed. (Therefore, it takes a little time to stop operation.) Pressing the ENTER key shifts the mode to the setting menu of print test. Pressing the MENU key shifts the mode to the next selection.	[FORM FEED]	[RESET]

JAM   X X X

Selection to check or not to check jam by feeding paper in test print.
XXX is changed with △ and ▽ keys.
Pressing the MENU key shifts the mode to the next selection.
Pressing the ENTER key shifts the mode to the test print menu.

XXX	Meaning
ON	Feeds paper, perform test print, and check jam.
OFF	Does not feed paper, does perform printing, and does not check jam.

HEATER   X X X

Selection of temperature control YES/NO.
XXX is changed with △ and ▽ keys.
Pressing the MENU key shifts the mode to the next selection.
Pressing the ENTER key shifts the mode to the test print menu.

XXX	Meaning
ON	Performs temperature control.
OFF	Does not perform temperature control. The heater is off.

MULTI   X X X

Selection of multi print.
XXX is changed with △ and ▽ keys.
Pressing the MENU key shifts the mode to the next selection.
Pressing the ENTER key shifts the mode to the test print menu.

XXX	Meaning
ON	Printing is continued until the RESET key is pressed.
OFF	Only one sheet is printed.

Menu	Function	Execution	Cancel
`TEST PRINT`	`TONER          XXX` Selection of toner empty detection YES/NO. XXX is changed with △ and ▽ keys. Pressing the MENU key shifts the mode to the next selection. Pressing the ENTER key shifts the mode to the test print menu. 	XXX	Meaning
---	---
ON	Toner empty detection YES
OFF	Toner empty detection NO		[FORM FEED]	[RESET]
`NVRAM INITIAL`	NVRAM initializing. All the counter values and flags of NVRAM are cleared. After completion of the operation, a beep sound is generated. Pressing the MENU key shifts the mode to the counter set.	[FORM FEED]	After completion of the operation

`COUNTER SET`	Counters values setting.
	After completion of the operation, a beep sound is generated.
	Pressing the ENTER key shifts the mode to the counter setting menu.
	Pressing the MENU key shifts the mode to the version displaying menu.
	
	`DEV          XXXXX`
	Setting of the upper three digits of the five digits of the counter of print number for the developer cartridge. The upper three digits blink.
	Counts up with △ key.
	Counts down with ▽ key.
	
	`DEV          XXXXX`
	Setting of the lower two digits of the five digits of the counter of print number for the developer cartridge. The lower two digits blink.
	Counts up with △ key.
	Counts down with ▽ key.
	
	`DRM          XXXXX`
	Setting of the upper three digits of the five digits of the counter of print number for the drum cartridge. The upper three digits blink.
	Counts up with △ key.
	Counts down with ▽ key.
	
	`DRM          XXXXX`
	Setting of the lower two digits of the five digits of the counter of print number for the drum cartridge. The lower two digits blink.
	Counts up with △ key.
	Counts down with ▽ key.
		[FORM FEED]	After completion of the operation

JX-9460PS

Menu	Function	Execution	Cancel
COUNTER SET	**DEVTM XXXXX** Setting of the upper three digits of five digits of the time of toner motor rotation for the developer cartridge. The upper three digits blink. Counts up with △ key. Counts down with ▽ key.	[FORM FEED]	After completion of the operation
	DEVTM XXXXX Setting of the lower two digits of the five digits of the time of toner motor rotation for the developer cartridge. The lower two digits blink. Counts up with △ key. Counts down with ▽ key.		
	DRMTM XXXXX Setting of the upper three digits of five digits of the time of toner motor rotation for the drum cartridge. The upper three digits blink. Counts up with △ key. Counts down with ▽ key.		
	DRMTM XXXXX Setting of the lower two digits of five digits of the time of toner motor rotation for the drum cartridge. The lower two digits blink. Counts up with △ key. Counts down with ▽ key.		
	LIFE XXX Life counter setting The rounded value of the drum cartridge print number in the unit of 1024 is displayed when the drum cartridge is replaced. Counts up with △ key. Counts down with ▽ key.		
	TNL XXX Toner level setting. Counts up with △ key. Counts down with ▽ key. Pressing the MENU key shifts the menu to the developer life counter upper byte setting menu.		

5. Diag mode state transition

While pressing the MENU and the ENTER keys, turn on the power.

```
                    ┌──────────────────────────┐
                    │   PCU DIAG MODE #         │◄─────────────────────┐
                    └──────────────────────────┘                      │
                              │ MENU                                   │
          F/F                 ▼                                        │
LCD figure blinks  ◄──────  ┌──────────────────────────┐              │
                    RESET   │   SW SCAN          01     │◄──►△ ▽ 01,02,03
┌──────────────────────┐    └──────────────────────────┘
│ SW SCAN        01     │              │ MENU            ┌──────────────────────┐
└──────────────────────┘              │                 │ SW SCAN        XX     │
                                       ▼                 └──────────────────────┘
          F/F               ┌──────────────────────────┐
DATA LED blinks  ◄────────  │   OPTICAL SYS TEST        │
                    RESET   └──────────────────────────┘
┌──────────────────────┐              │ MENU
│ OPTICAL SYS TEST     │              │
└──────────────────────┘              ▼
          F/F               ┌──────────────────────────┐
DATA LED blinks  ◄────────  │   VOL TEST        MCH     │◄──►△ ▽ MCH,MCL,TC+
                    RESET   └──────────────────────────┘
┌──────────────────────┐              │ MENU            ┌──────────────────────┐
│ VOL TEST      MCH     │              │                 │ VOL TEST       XXX    │
└──────────────────────┘              ▼                 └──────────────────────┘
          F/F               ┌──────────────────────────┐ MENU
DATA LED blinks  ◄────────  │   TEST PRINT              │
                    RESET   └──────────────────────────┘
┌──────────────────────┐              ▲
│ P=XX H=XXX T=XXX     │         ENTER │  ENTER
└──────────────────────┘              │
P = Print number            ┌──────────────────────────┐
H = Thermistor reading      │   JAM              ON     │◄──►△ ▽ ON,OFF
T = Toner sensor reading    └──────────────────────────┘
                                       │ MENU            ┌──────────────────────┐
                                       │                 │ JAM            XXX    │
                                       ▼                 └──────────────────────┘
                            ┌──────────────────────────┐
                            │   HEATER           ON     │◄──►△ ▽ ON,OFF
                            └──────────────────────────┘
                                       │ MENU            ┌──────────────────────┐
                                       │                 │ HEATER         XXX    │
                                       ▼                 └──────────────────────┘
                            ┌──────────────────────────┐
                            │   MULTI            OFF    │◄──►△ ▽ OFF,ON
                            └──────────────────────────┘
                                       │ MENU            ┌──────────────────────┐
                                       │                 │ MULTI          XXX    │
                                       ▼                 └──────────────────────┘
                            ┌──────────────────────────┐
                            │   TONER            ON     │◄──►△ ▽ ON,OFF
                            └──────────────────────────┘
                                       │ MENU            ┌──────────────────────┐
                                       │                 │ TONER          XXX    │
                                       ▼                 └──────────────────────┘
                              │ MENU
          F/F                 ▼
Beep             ◄────────  ┌──────────────────────────┐
NVRAM is cleared.           │   NVRAM INITIAL           │
                            └──────────────────────────┘
                                       │ MENU
                                       ▼
                                     To ①                              From ②
```

JX-9460PS

From ① MENU

Beep NVRAM is set. ◄──F/F──► COUNTER SET

ENTER   ENTER

DEV   XXXXX   ◄──► △ UP, ▽ DOWN

DEV   XXXXX

MENU

DEV   XXXXX   ◄──► △ UP, ▽ DOWN

DEV   XXXXX

MENU

DRM   XXXXX   ◄──► △ UP ▽ DOWN

DRM   XXXXX

MENU

DRM   XXXXX   ◄──► △ UP ▽ DOWN

DRM   XXXXX

MENU

DEVTM   XXXXX   ◄──► △ UP, ▽ DOWN

DEVTM   XXXXX

MENU

DEVTM   XXXXX   ◄──► △ UP, ▽ DOWN

DEVTM   XXXXX

MENU

DRMTM   XXXXX   ◄──► △ UP ▽ DOWN

DRMTM   XXXXX

MENU

DRMTM   XXXXX   ◄──► △ UP ▽ DOWN

DRMTM   XXXXX

MENU

LIFE   XXX   ◄──► △ UP ▽ DOWN

LIFE   XXX

MENU

TNL   XXX   ◄──► △ UP ▽ DOWN

TNL   XXX

MENU

MENU

[11] TROUBLESHOOTING

Troubleshooting (A) is for printing problems, and troubleshooting (B) is for error codes.

(A) Printer troubleshooting

1. White line appearing vertically on print

■ Appearance of white streak or band in the paper feeding direction
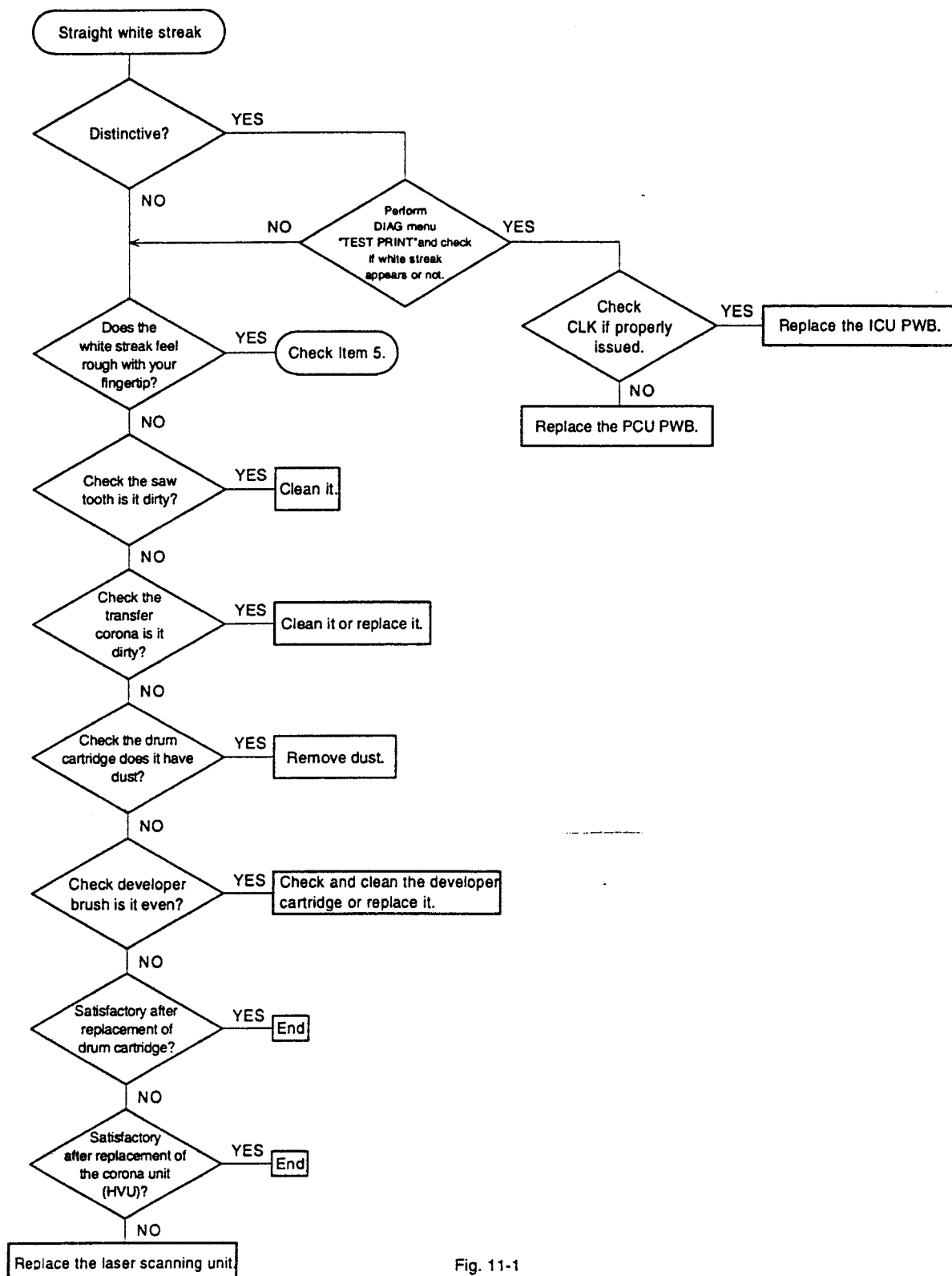
Fig. 11-1

2. Black line appearing vertically on print

■ Appearance of black streak or band in the paper feeding direction

Straight black streak

Distinctive? — YES → Perform DIAG menu "TEST PRINT" and check if black streak appears or not. — YES → Replace the PCU PWB.

NO (Distinctive?)

Perform DIAG menu → NO → Replace the ICU PWB.

Does the black streak feel rough with your fingertip? — YES → Check Item 5

NO

Exposed to direct sunlight? — YES → Relocate the machine.

NO

Check the saw tooth is it dirty? — YES → Clean it.

NO

Check the transfer corona is it dirty? — YES → Clean it or replace it.

NO

Replace the drum cartridge and see if the problem is corrected. — YES → End

NO

Check the developer cartridge is it dirty? — YES → Clean or replace it.

NO

Replace the high voltage unit and see if the problem is corrected. — YES → End

NO

Replace the laser scanner unit.

Fig. 11-2

3. Black line appearing horizontally on print

■ Appearance of black streak or band perpendicular to the paper feeding direction
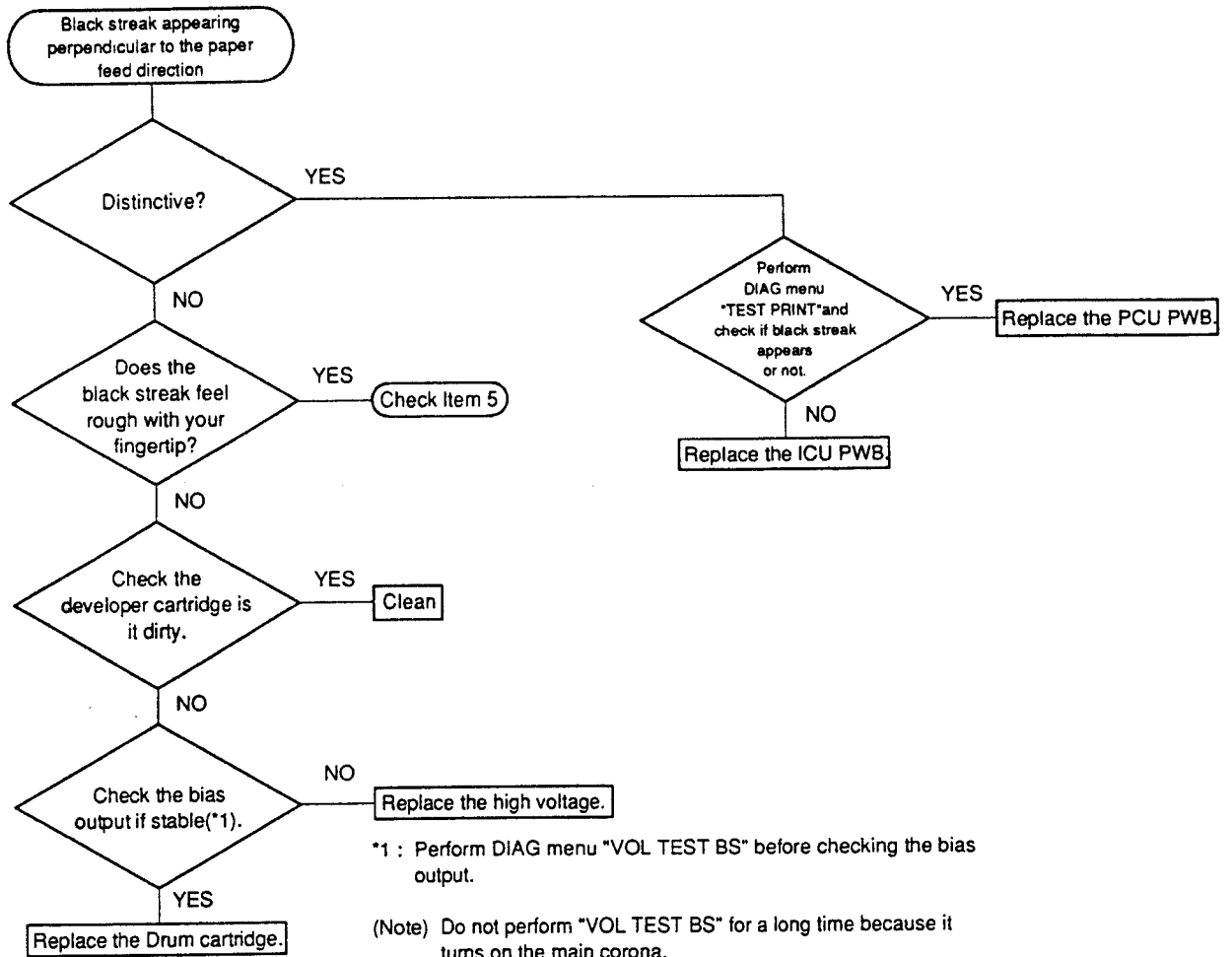
Fig. 11-3

4. Poor fusing

■ Printed image felt rough and toned image easily wiped away with your fingertip

```
                    ┌─────────────────────┐
                    │   Improper fusing   │
                    └─────────────────────┘
                              │
                        ╱───────────╲
                       ╱  Check the  ╲
                      ╱ lower fuser   ╲   NO    ┌──────────────────────────────┐
                      ╲ roller if it  ╱─────────│ Replace the lower fuser roller.│
                       ╲ does not    ╱          └──────────────────────────────┘
                        ╲ contain    ╱
                         ╲a crack.  ╱
                          ╲───────╱
                              │ YES
                        ╱───────────╲
                       ╱  Check the  ╲   YES    ┌──────────────────────────┐
                      ╱ heat roller   ╲─────────│  Replace the fuser unit. │
                      ╲ surface if    ╱         └──────────────────────────┘
                       ╲ not scratched╱                       ▲
                        ╲───────────╱                         │
                              │ NO                            │
                        ╱───────────╲                         │
                       ╱  Replace     ╲  NO    ┌─────────┐    │
                      ╱ the PCU PWB    ╲───────│   End   │    │
                      ╲ and see if     ╱       └─────────┘    │
                       ╲ improper     ╱                       │
                        ╲fusing occurs╱                       │
                          ╲─────────╱                         │
                              │ YES                           │
                              └────────────────────────────────┘
```

Fig. 11-4

5. Carrier transferred onto the drum surface

■ Printed image felt rough and toned image easily wiped away with
your fingertip

*2: Perform DIAG menu "VOL TEST BS" before checking.

(NOTE) Do not perform "VOL TEST BS" for a long time because it
turns on the main corona .
Complete measurement in a few seconds.

```
        Carrier transferred onto
          the drum surface
                 │
                 ▼
        ┌─────────────────┐
        │   Check the      │      NO
        │ developer bias   │──────────────────────────────────┐
        │voltage if normal(*2)                                 │
        └─────────────────┘                                    │
                 │ YES                                          │
                 ▼                                              ▼
        ┌─────────────────┐                         ┌─────────────────┐
        │     Check        │     NO                  │     Check        │    NO
        │ the print sample │────► Replace the        │ the bias voltage │────► Replace the PCU PWB.
        │ if a trace of irregular  PCU PWB.          │ control signal   │
        │ corona discharge was                       │  Is it correct?  │
        │  found (NOTE).   │                          │      (*5)        │
        └─────────────────┘                         └─────────────────┘
                 │ YES                                          │ YES
                 ▼                                              ▼
        ┌─────────────────┐     YES                  Replace the developer unit.
        │   Check the      │────► Clean it.
        │  saw tooth       │
        │  is it dirty?    │
        └─────────────────┘
                 │ NO
                 ▼
        ┌─────────────────┐     YES
        │   Check the      │────► Clean it.
        │ grid is it dirty │
        └─────────────────┘
                 │ NO
                 ▼
        ┌─────────────────┐     YES
        │   Check the      │────► Clean or replace the transfer
        │ transfer corona  │      corona unit.
        │  is it dirty.    │
        └─────────────────┘
                 │ NO
                 ▼
        ┌─────────────────┐     YES
        │   Replace        │────► End
        │ the drum cartridge│
        │ and see if the problem
        │ was corrected.   │
        └─────────────────┘
                 │ NO
                 ▼
        Replace the high voltage unit.
```

NOTE : Black or white bands may appear in the paper feeding
direction if it is an irregular corona discharge.

Fig. 11-5

6. Background

■ Background copied on a part or on the entire area of print

Background

Check the
saw tooth
is it dirty? — YES → Clean it.

NO

Check the
transfer roller
is it dirty? — YES → Clean or replace it.

*3: Perform DIAG menu "VOL TEST BS" before checking the bias output.

(NOTE) Do not perform "VOL TEST BS" for a long time because it
turns on the main corona .
Complete measurement in a few seconds.

NO

Check the
developer bias
voltage is it
correct(*3)? — NO →

YES

Check
the bias voltage
control signal if is it
correct? — NO → Replace the PCU PWB.

Check the
developer cartridge
is it dirty? — YES → Clean it.

YES

Replace the high voltage unit.

NO

Replace
the developer
cartridge and see if the
problem is
eliminated. — YES → End

NO

Replace the drum cartridge.

Fig. 11-6

7. Lack of print density

■ Extremely light print density


```
              ( Lack of print density. )
                        │
                        ▼
              ◇ Check the
                developer cartridge ◇──YES──→ [ Replace the toner cartridge. ]
                is toner
                exhausted?
                        │
                        NO
                        ▼
              ◇ Check the
                saw tooth ◇──YES──→ [ Clean it. ]
                is it dirty?
                        │
                        NO
                        ▼
              ◇ Check the
                transfer corona ◇──YES──→ [ Clean or replace the transfer
                is it dirty?                corona unit. ]
                        │
                        NO
                        ▼
              ◇ Check
                the developing ◇──NO──────────────────────┐
                bias voltage                               │
                is it correct                              ▼
                (*4)?                            ◇ Check
                        │                          the bias voltage ◇──NO──→ [ Replace the PCU PWB. ]
                        YES                         control signal is it
                        ▼                           correct?
              ◇ Check the                                 │
                developing cartridge ◇──YES──→[Clean it]   YES
                is it dirty?                               ▼
                        │                        [ Replace the high voltage unit. ]
                        NO
                        ▼
              ◇ Replace
                the developer ◇──YES──→ [ End ]
                cartridge and see if the
                problem is
                eliminated.
                        │
                        NO
                        ▼
              ◇ Replace
                the drum ◇──YES──→ [ End ]
                cartridge and see if the
                problem is
                eliminated.
                        │
                        NO
                        ▼
              ◇ Replace
                the high voltage ◇──YES──→ [ End ]
                unit and see if the
                problem is
                corrected.
                        │
                        NO
                        ▼
              [ Replace the laser scan unit. ]
```

*4: Perform DIAG menu "VOL TEST BS" before checking the bias output.

(NOTE) Do not perform "VOL TEST BS" for a long time because it
turns on the main corona .
Complete measurement in a few seconds.

Fig. 11-7

(B) Troubleshooting for error code

1. Operator call error

Error Message	Description	Recover
INPUTBUFFER FULL	The host computer ignores the printer's busy state and continues to send data.	Check the protocol signal line between the printer and the host computer or adjust the setting. Press the [CONTINUE/RESET] key.
COVER OPEN	Front cover of printer is not closed properly.	Close the front cover firmly and check that it is properly latched. Press the [CONTINUE/RESET] key.
INTERFACE ERROR	RS-232C interface error (For example, framing error)	Check the RS-232C interface function and execute it again. Press the [CONTINUE/RESET] key.
DATA LOSS ERROR	Too many characters on one line	Delete excess characters and execute again. Press the [CONTINUE/RESET] key.
PAPER OUT TRAY	Paper empty or paper cassette removed.	Add paper or replace the paper cassette. If the paper size matches the previous setting, the printer will return online.
PAPER JAM	Paper is jammed.	Check the cassette, open the front and top covers, and remove the misfed paper. Press the [CONTINUE/RESET] key.
TONER LOW	Near end of toner/developer cartridge life.	Automatically cleared.
REPL. TONER	End of toner/developer cartridge life.	Replace the toner/developer cartridge.
DRUM NEAR END	Near end of photoconductor cartridge life.	Automatically cleared.
REPL. DRUM	End of photoconductor cartridge life.	Replace the photoconductor cartridge.
DATA MEMORY FULL	Printer memory cannot accommodate soft fonts or other data included with the print job. May be caused by font rotation, i.e. specifying an orientation different from that of the font card.	First press the [CONTINUE/RESET] key. Then, decrease occupied memory space by decreasing number of soft fonts or eliminating font rotation. When you press the [CONTINUE/RESET] key, the soft font or macro entered prior to going offline is deleted. If you press and hold the [CONTINUE/RESET] key until "RESET" appears on the display, all temporary soft fonts and macros are deleted.
EEPROM ERROR	Did you turn off power while setting parameters? Check to see again if the setting is correct.	Press the [CONTINUE/RESET] key and then set the parameters again.

2. Service engineer call error

<Error type>

a. P1 to P4: A fault in the PCU (Process control unit)
b. C1 to C6: Printer mechanism fault.
c. E1 to E5: A fault in the ICU (Interface control unit)

Display	Meaning
SERVICE (E1)	ICU ROM Checksum Error
SERVICE (E2)	ICU RAM Read/Write Error
SERVICE (E3)	Expansion Memory Error
SERVICE (E4)	ICU Hardware Read/Write Error
SERVICE (E5)	EE-PROM Checksum Error
SERVICE (E6-E9)	(Reserved)
SERVICE (FC)	Font card Error

Display	Meaning
SERVICE (P1)	PCU ROM Checksum Error
SERVICE (P2)	PCU RAM Read/Write Error
SERVICE (P3)	Non-volatile RAM Read Error
SERVICE (P4)	Serial Communication Error
SERVICE (P5-P6)	(Reserved)

Display	Meaning
SERVICE (C1)	Optical System Error
SERVICE (C2)	Driving Motor Defective
SERVICE (C3)	Polygon Motor Defective
SERVICE (C4)	High Heater Temperature
SERVICE (C5)	Low Heater Temperature
SERVICE (C6)	Thermistor Open
SERVICE (C7-C9)	(Reserved)

\<Error check point\>

	Cause	Error description		Action
	COVER OPEN	1) Check that the transport unit is closed.	No	1) Close the transport unit.
		2) Check that the drum cartridge is installed.	No	2) Insert the drum cartridge.
		3) Check that PCU IC4 18pin is HIGH.	Yes	3) Replace the CPU.
			No	4) Defective contact.
	PAPER JAM	1) Check that paper is discharged from the machine.	No	1) Discharge paper.
		2) Check that the paper-entry sensor actuator is not hung.	Yes	2) Replace the paper-entry sensor.
		3) Check that the paper-exit sensor actuator is not hung.	Yes	3) Replace the paper-exit sensor.
		4) Turn on/off the actuator to check that PCU IC4 21pin and 22pin levels change.	No	4) Defective contact.
			Yes	Replace the CPU.
	PAPER OUT	1) Check that paper is in the cassette.	No	1) Supply paper in the cassette.
		2) Check that the paper empty sensor is not hung.	Yes	2) Replace the paper empty sensor.
		3) Turn on/off the actuator and check that CS-PWB IC1 12pin levels change.	No	3) Defective contact.
			Yes	Replace IC1.
P1	PCU ROM Sumcheck error	Check the CPU if the correct one is used.	Yes	Repace the CPU (M37451) with a new one.
P2	PCU RAM Sumcheck error	Check the CPU if the correct one is used.	Yes	Replace the CPU (M37451) with a new one.
P3	NVRAM read error	Check the CPU, if operating normally. CE received at power on.	No	Replace the CPU (M37451) with a new one.
			Yes	Replace IC1 (PCU) with a new one.
P4	Serial communication error	1) Check that STS signal is normally supplied from CPU (M37451) 3pin to ICU.	No	Replace the CPU (M37451) with a new one.
		2) Check that CMD signal is normally supplied to CPU (M37451) 4pin.	No	Check ICU and MD-PWB.
C1	Optional system error	1) Check VIDEO if received correctly.	No	Replace the CPU (M37451) with a new one.
		2) Check that SYNC is normally supplied to CPU (M37451) 24pin.	No	Replace LSU with a new one.
C2	Main motor failure	1) Check that the main motor rotates.	Yes	Replace the developer cartridge.
		2) Check +24VH if properly supplied.	No	Replace the power supply unit with a new one.
		3) Check MMDA, MMD$\overline{\text{A}}$, MMDB, MMD$\overline{\text{B}}$ if properly received when the motor is on.	No	Replace the CPU (M37451) with a new one.
			Yes	Replace the MD-PWB with a new one.
C3	Polygonal motor failure	1) Check +24VH if properly supplied.	No	Replace the power supply unit with a new one.
		2) Check PMD if correctly received when the polygonal motor is on.	No	Replace IC6 (PCU) with a new one.
		3) Check PMTLK if issued properly when the polygonal motor is on.	No	Replace the optical unit with a new one.
C4	Irregularly high heater temperature	1) Check the resistance across the thermistor if 100KΩ at room temperature of 25˚C.	No	Replace the thermistor with a new one.
		2) Check HLON if properly issued, not always at a low.	No	Replace IC5 (PCU) with a new one.
		3) Check that a voltage is always applied to the heater.	No	Replace the power supply with a new one.
C5	Irregularly low heater temperature	1) Check the resistance across the thermistor if 100KΩ at room temperature of 25˚C.	No	Replace the thermistor with a new one.
		2) Check HLON if at a low during warmup.	No	Replace IC5 (PCU) with a new one.
		3) Check that a voltage is applied to the heater.	No	Replace the power supply with a new one.
C6	Thermistor open	1) Check the resistance across the thermistor if 100KΩ at room temperature of 25˚C.	No	Replace the thermistor with a new one.
			Yes	Replace the CPU (M37451) with a new.
E1	ICU ROM sumcheck error	1) Check the ROM chip if correct.	No	Replace the ROM chip with a new one.
E2	ICU RAM read/write error	1) Check the RAM chip if correct.	No	Replace the RAM chip with a new one.
E3	Expansion memory read/write error	1) Check the expansion memory if correct.	No	Replace the expansion memory with a new one.
E4	ICU hardware error			Replace the ICU with a new one.
E5	ICU EE-PROM sumcheck error	1) Initialize the EE-PROM. (Setting for the destination)		Replace the EERROM with a new one.

[12] PROCESS CONTROL UNIT (PCU) CIRCUIT DESCRIPTION

1. Outline of PCU

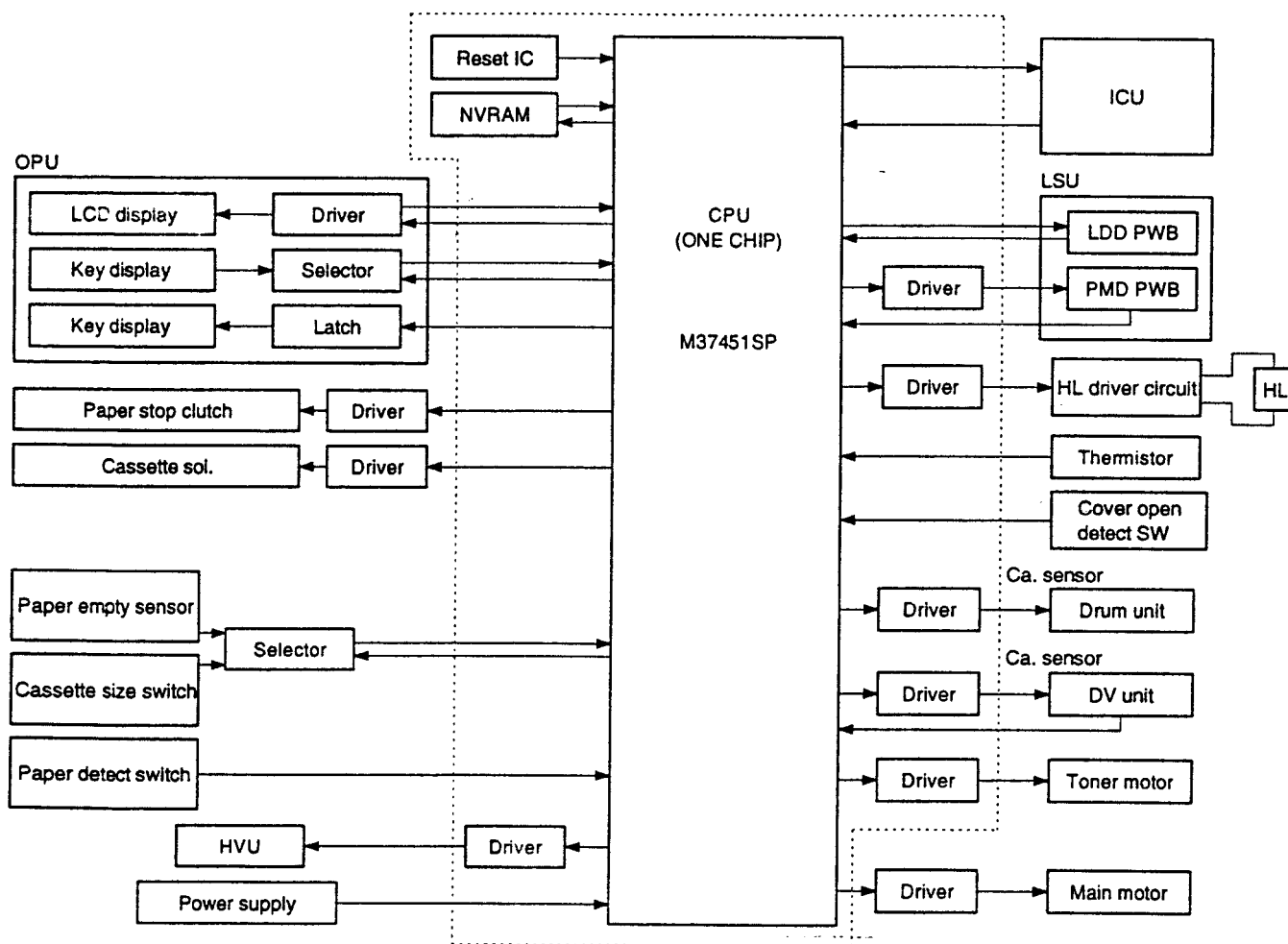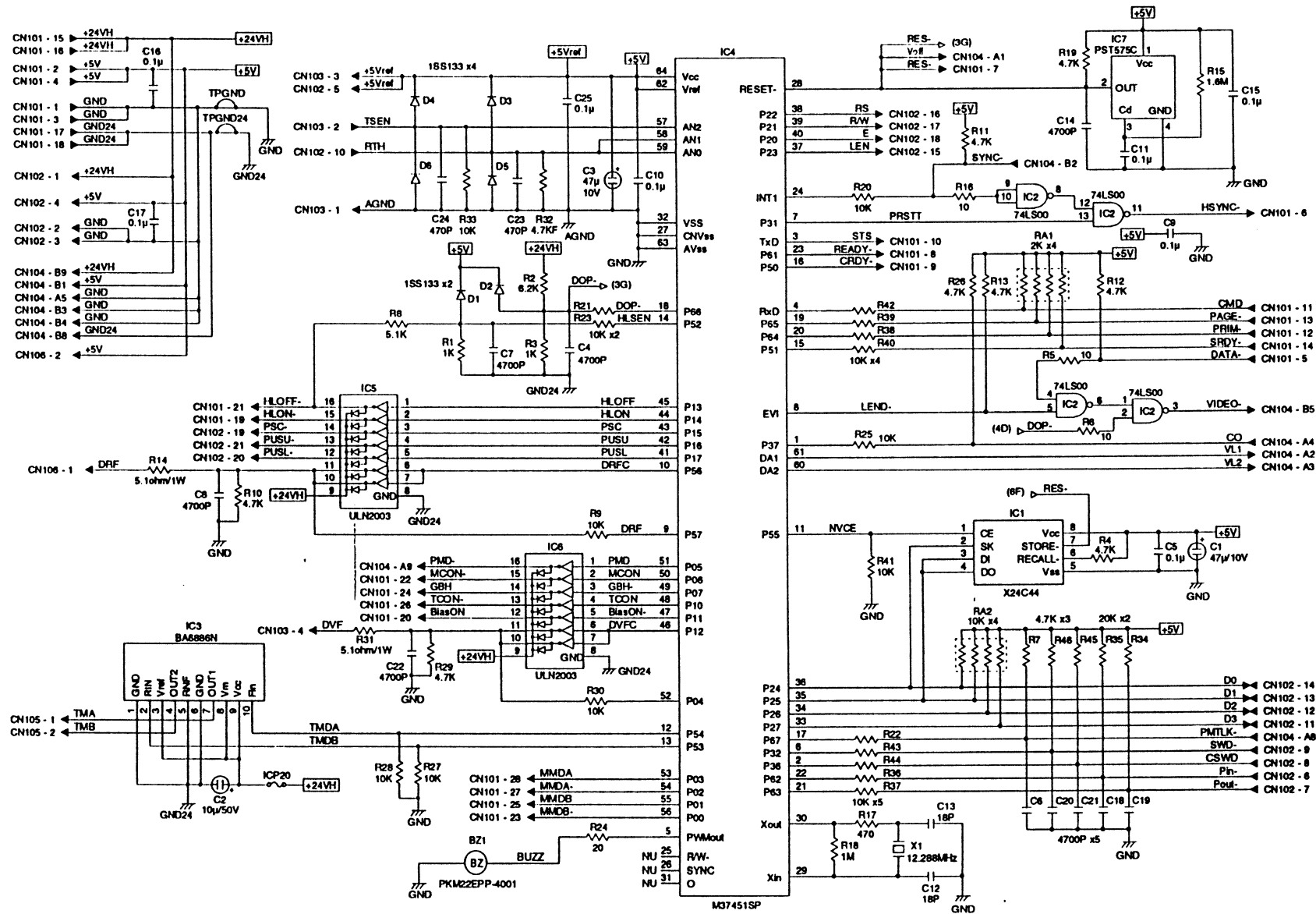The PCU performs the control of the printer engine and interfaces with ICU and OPU.

Block diagram

Fig. 12-1-A

Fig. 12-1-B

-54-

JX-9460PS

1-1. CPU (M37451MS)

The M37451MS used in the PCU is an 8-bit single-chip microcomputer which includes 16-byte ROM and 384-byte RAM, three 16-bit timers, one serial I/O, three channels of 8-bit AD convertor, two channels of 8-bit DA convertor, forty eight I/O ports.
This CPU is used in the single chip mode.

CPU Terminal arrangement

Pin No.	In/Out	Signal name	Function
1	I	CO	Laser power control signal
2	I	CSWD	Cassette size, paper out detect signal
3	O	STS	Status output signal to ICU
4	I	CMD	Command input signal from ICU
5	O	BUZZ	Buzzer signal
6	I	$\overline{SWD}$	Key input signal from OPU
7	O	PRSTT	Print start signal
8	O	$\overline{LEND}$	Line end signal
9	I	DRF	Drum unit cartridge sensor detect signal, H: New Drum
10	O	DRFC	Drum unit cartridge sensor cut signal, H: sensor cut
11	O	NVCE	NVRAM chip enable signal
12	O	TMDA	Toner motor drive signal
13	O	TMDB	Toner motor drive signal
14	I	HLSEN	Heater lamp control abnormal detect signal
15	I	$\overline{SRDY}$	Status ready signal from ICU
16	O	$\overline{CRDY}$	Command ready signal to ICU
17	I	$\overline{PMTLK}$	Polygon motor lock signal
18	I	$\overline{DOP}$	Cover open detect signal
19	I	$\overline{PAGE}$	Print action start signal from ICU
20	I	$\overline{PRIM}$	PCU initialize request signal from ICU
21	I	$\overline{Pout}$	Paper exit sensor signal
22	I	$\overline{Pin}$	Pin sensor signal
23	O	$\overline{READY}$	Print ready signal to ICU
24	I	$\overline{SYNC}$	Horizontal synchronous signal
25 – 26	—	—	NC
27	—	CNVss	GND
28	—	$\overline{RES}$	CPU reset signal
29	I	Xin	Clock input
30	O	Xout	Clock output
31	—	—	NC
32	—	Vss	GND
33 – 36	I/O	D3 – 0	LCD control data bus, key signal address, NVRAM signal
37	O	LEN	LED control enable signal
38	O	RS	LCD control resistor selection signal
39	O	R/W	LCD control data read/write signal, H: read
40	O	E	LCD control data synchronous signal
41	O	PUSL	NC
42	O	PUSU	Upper paper feed solenoid control signal, H: PUSU ON
43	O	PSC	Paper stopper clutch control signal, H: PSC ON
44	O	HLON	Heater lamp control signal, H: Heater lamp ON
45	O	HLOFF	Heater lamp control signal, H: Heater lamp OFF
46	O	DVFC	DV unit cartridge sensor cut signal, H: sensor cut
47	O	$\overline{BiasON}$	Bias control signal, L: Bias ON
48	O	TCON	Transfer corona control signal, H: Transfer corona ON
49	O	$\overline{GBH}$	Grid bias control signal, L: Grid bias HIGH
50	O	MCON	Main corona control signal, H: Main corona ON
51	O	PMD	Polygon motor drive signal, H: Polygon motor ON
52	I	DVF	DV unit cartridge sensor detect signal, H: New DV
53	O	MMDA	Main motor drive signal
54	O	$MMD\overline{A}$	Main motor drive signal
55	O	MMDB	Main motor drive signal
56	O	$MMD\overline{B}$	Main motor drive signal
57	I	TSEN	Toner sensor input signal (analog)
58 – 59	I	RTH	Thermistor input signal (analog)
60	O	VL2	Laser power control signal (analog)
61	O	VL1	Laser power control signal (analog)
62	—	Vref	+5V
63	—	AVss	GND
64	—	Vcc	+5V

Table 12-1

1-2. NVRAM (X24C44)

The X24C44 is a CMOS RAM which includes CMOS static RAM and its relevant EEPROM. Its capacity is 16 words x 16 bits. Data is passed through one data bus.

When the STROBE pin is LOW, all RAM data is passed to the EEPROM. When the recall signal is inputted, the EEPROM data is returned to the RAM. The RAM data can be read or written independently of this transmission.

Noted within parenthesis is a pin NO.

Fig. 12-2

STORE
When STORE pin is made LOW, data transmission from RAM to EEPROM is started

RECALL
When RECALL pin is made LOW, data transmission from EEPROM to RAM is started.

(NVRAM sequence)

Fig. 12-3-2

1-3. Driver (ULN2003)

The ULN2003 is a transistor array composed of Darlington- paired transistors and the peripheral circuits.
ULN2003 pin configuration

Fig. 12-4

16 x 16
Top view

Fig. 12-3

CE	Chip enable
SK	Serial clock
D,	Serial data, in
D$_o$	Serial data, out
RECALL	Recall
STORE	Store
V$_{cc}$	+5V
V$_{ss}$	GND

Table 12-2-2

[Equivalent circuit]

Fig. 12-5

(Pin functions)

Chip Enable (CE)
The Chip Enable input should be made HIGH when performing read or write. When CE is LOW, the instruction register is reset and X24C44 goes into the low power standby mode.
Serial Clock (SK)
The Serial Clock is used for every input/output of the data.
Data In (DI)
The Data In is used for serial data input.
Data Out (DO)
The Data Out is used for serial data output.
This pin is kept at HIGH except when data are outputted according to a read command.

1-4. Toner motor driver (BA6886N)

The BA6886N is a transistor array composed of H-bridge-connected transistors and the peripheral circuits.
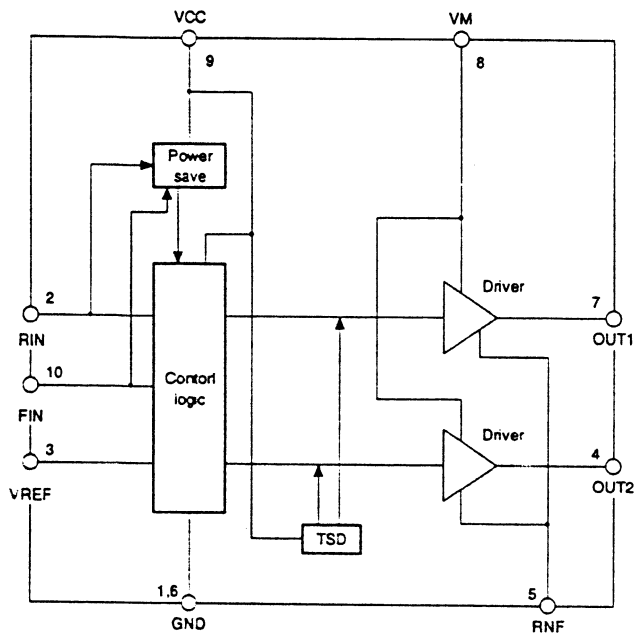
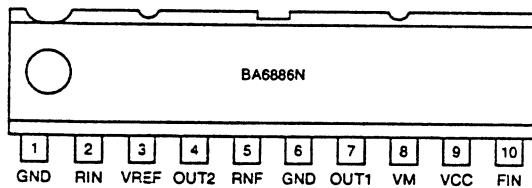### [BA6886N block diagram]

Fig. 12-6-1

(Pin location)

Fig. 12-6-2

(Pin functions)

Pin No.	Pin Name	Functions
1	GND	GND
2	RIN	Logic input pin
3	VREF	Output HIGH voltage setting pin
4	OUT2	Motor output pin
5	RNF	Output section GND, Output current detecting resistor connection pin.
6	GND	GND
7	OUT1	Motor output pin
8	Vn	Motor section power
9	Vcc	Power pin
10	FIN	Logic input pin

Table 12-2-2

(I/O truth value table)

FIN	RIN	OUT 1	OUT 2	Mode
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	L	L	Brake
L	L	OPEN	OPEN	Standby

Table 12-6-3

1-5. Main motor driver (SLA7024M)

The SLA7024M is a stepping motor driven by the uni-polar constant current.
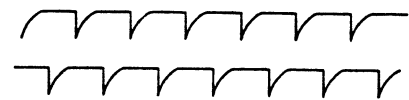
[Block diagram]
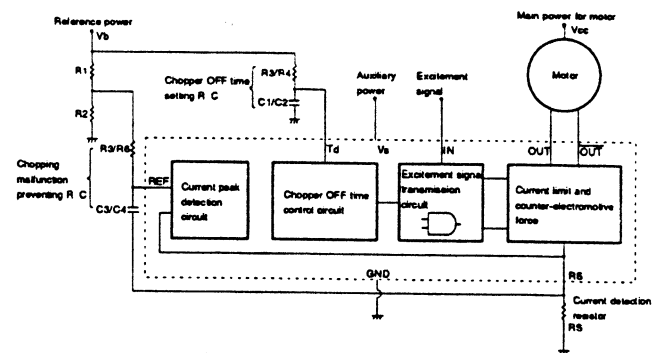
Fig. 12-7-1

[Motor driver SLA7024M control signal]
Input signal
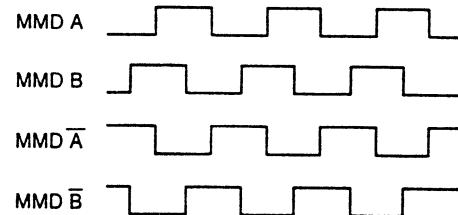
Output current

* The current waveforms will vary according to the load torque.
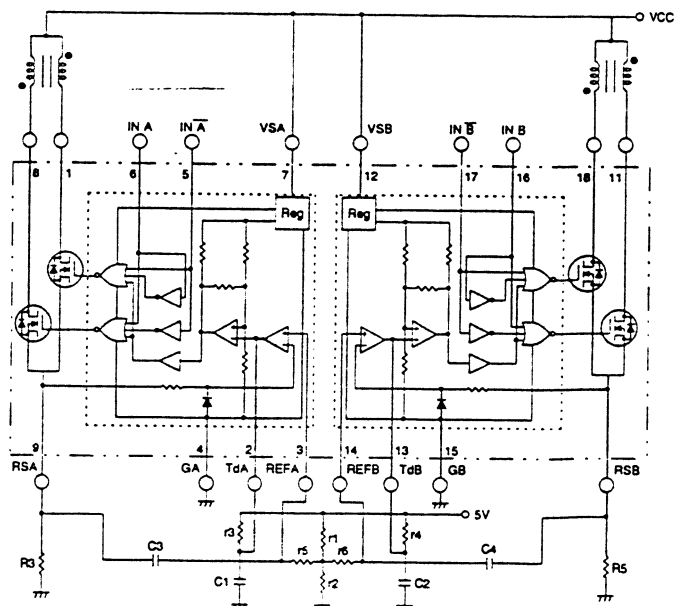
Fig. 12-7-2

[Equivalent circuit]

Fig. 12-7-3

- 57 -

1-6. Printer engine control

The printer state is detected by the input circuit and each section is controlled to perform printing.
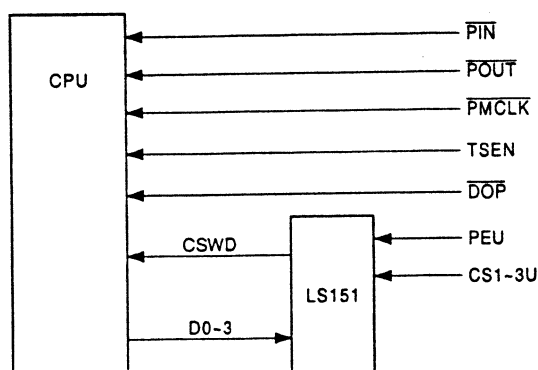
(1) Engine status input circuit

Fig. 12-8

Pin: Paper-in sensor. Senses paper presence inside the body (in front of the PS roller) at LOW.

Pout: Paper-out sensor. Senses paper presence inside the body (in the paper exit side from the fuser section) at LOW.

PMTLK: Polygon motor lock signal. Senses that the polygon motor has reached a constant speed at LOW.

TSEN: Analog signal from the toner sensor.

DOP: When the cover is opened, the voltages (+24V) which are regarded as dangerous for the user, such as the motor, are cut off by the safety switch. The PCU detects it by dividing +24V.

CSWD: Multiplexed signal of PEU-CS1 - 3U.

PEU: Sensor output which shows paper empty in the upper cassette. (Empty at HIGH.)

CS1 ~ 3U: Senses paper size in the upper cassette. (Push the main body switch in the projection at the right side of the cassette.)

CS1U	CL2U	CS3U	Paper size
L	L	L	NO TRAY
L	L	H	LEGAL
L	H	L	LETTER
L	H	H	—
H	L	L	ENVELOPE
H	L	H	A4
H	H	L	—
H	H	H	—

Table 12-3

(2) Output circuit
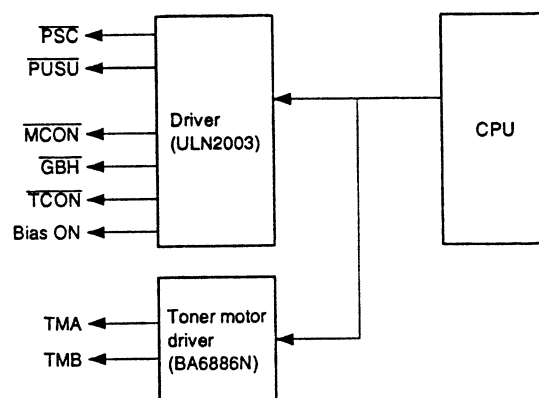
Fig. 12-9

PSC: Paper stop clutch ON signal. (ON at LOW.)

PUSU: Upper cassette paper pick up solenoid ON signal. (ON at LOW)

PUSL: Lower cassette paper pick up solenoid ON signal. (ON at LOW.)

MCON: Main corona control signal. (ON at LOW)

GBH: Grid bias voltage control signal. (High at HIGH, low at LOW.)

TCON: Transfer corona control signal. (ON at LOW.)

BiasON: Developer bias control signal. (ON at HIGH.)
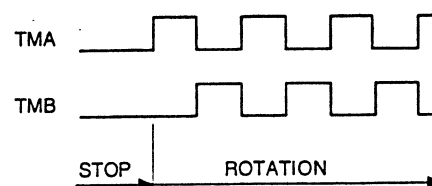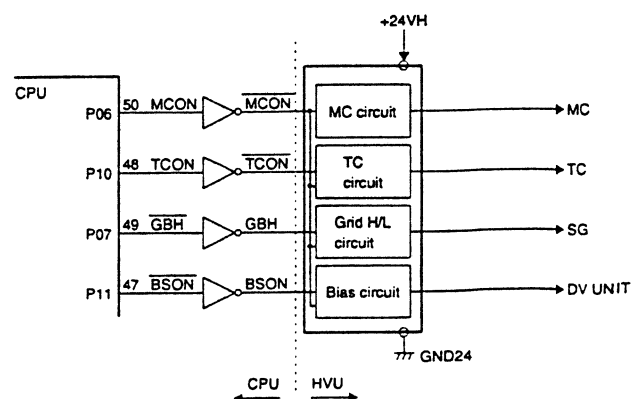
TMA, TMB: Toner motor (synchronous motor) drive signal

Fig. 12-10-A

Interface with PCU (PCU - High voltage unit)

Control signal	MC output	TC output	BS output	GBhigh output	GBlow output
MCON	low active	low active	low active	low active	low active
TCON	X	low active	X	X	X
BSON	X	X	hi active	X	X
GBH	X	X	X	X	low active

X = Arbitrary state
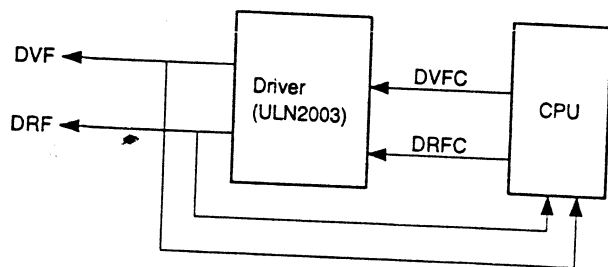
(3) User maintenance parts control

Fig. 12-11

DVF: DV cartridge NEW sense signal. (NEW at HIGH.)

DVFC: DV cartridge cartridge sensor cut signal. (Cut at HIGH.)

DRF: Drum cartridge NEW sense signal. (NEW at HIGH.)

DRFC: Drum cartridge sensor cut signal. (Cut at HIGH.)
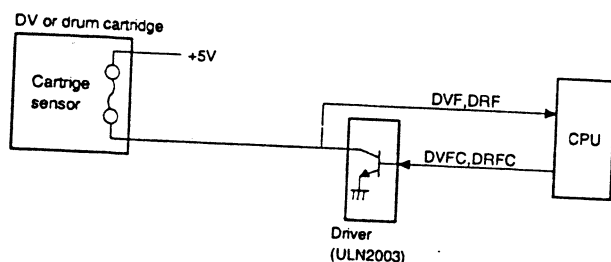
NEW sense in each cartridge

Fig. 12-12

When DVF or DRF is HIGH, the CPU senses NEW of each cartridge and resets the counter. Then DVFC or DRFC is driven to HIGH to cut the cartridge sensor operation.

When the cartridge sensor operation is cut off, DVF or DRF signal becomes LOW.

(4) Output control with input

Heater lamp control

The voltage divided by the thermistor on the fuser roller and R32 (4.7kΩ) of the PCU are inputted to AN0 and AN1 ports to detect the surface temperature of the fuser roller, controlling ON/OFF of the heater lamp with $\overline{HLON}$ and $\overline{HLOFF}$ signals.

Heater temperature control, high temperature error, low temperature error, thermistor open are detected and processed by the CPU.

Heater lamp control circuit
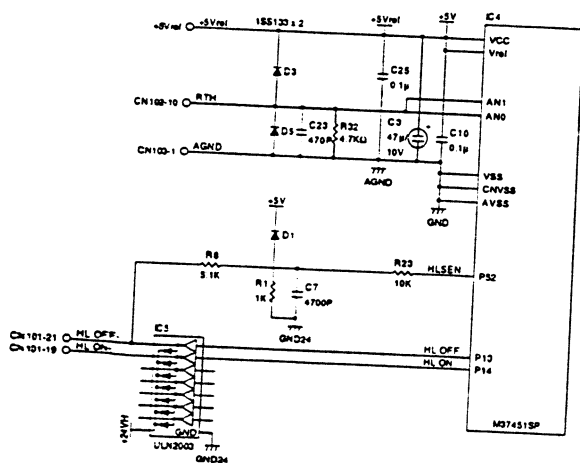
Fig. 12-13-1

Heater control signal self test

When the power is ON, heater lamp control signals $\overline{HLON}$ and $\overline{HLOFF}$ are changed. When HLSEM is not as shown below, there may be some trouble in the heater lamp control system. In that case, the heater lamp is turned off and the low temperature error (SERVICE C5) is displayed.

HLON	HLOFF	HLSEN
L	L	L
L	H	L
H	L	L
H	H	H

Tab. 12-4

Polygon motor

When the motor speed reaches the specified level (11338.583 rpm), $\overline{PMTLK}$ signal is supplied and ON/OFF of the motor is controlled by $\overline{PMD}$.

Polygon motor control block diagram

Fig. 12-3-2

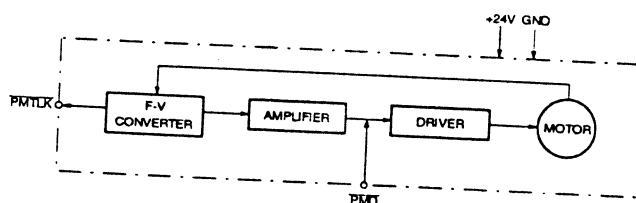# 2. Print control peripheral circuit

2-1. Operation panel unit (OPU)

The OPU is composed of the LCD display section (16-digit, one line), four LEDs and their driver, eight key switches and their multiplexer, and the paper exit sensor. It is controlled by the 8-bit CPU of PCU.

| Major functions |

- LCD display function

- Controls LCD display/blinking in one line of 16 digits by the LCD driver.

- LED display function
  Latches data in LS173 and lights four LEDs.

- Key input multiplex function
  Multiplexes eight key inputs with LS151.

- Paper exit detection
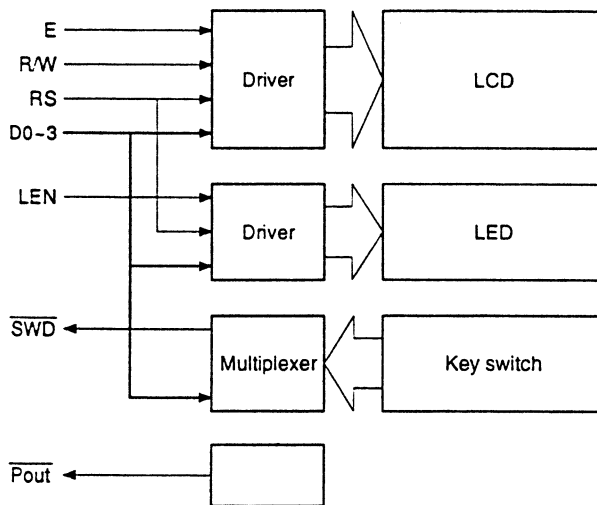 Detects paper exit with the photo interrupter.

Fig. 12-14

E	LCD control data synchronous signal
R/W	LCD control data read/write signal, H: read
RS	LCD control resistor selection signal
D3 ~ 0	LCD control data bus, LED data bus, key signal address
LEN	LED data enable signal
$\overline{SWD}$	Key input signal
$\overline{Pout}$	Paper exit sensor signal

LCD control block diagram
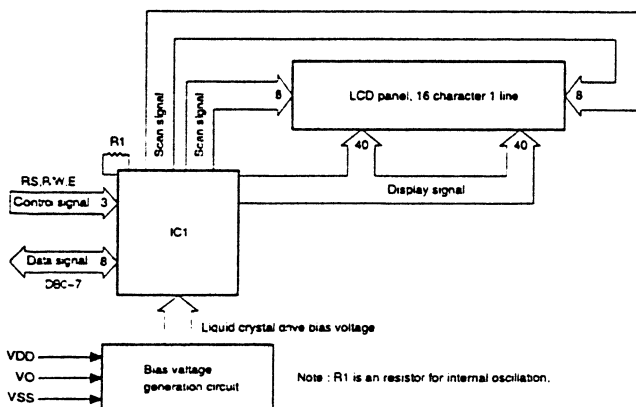

Fig. 12-15

2-2. Laser scanning unit (LSU)

The LSU is composed of the polygon motor unit, the laser driver, and the BD circuit.
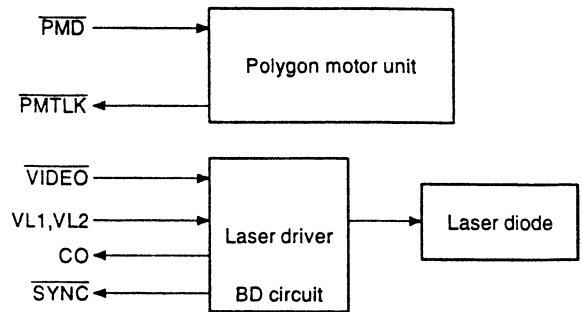

Fig. 12-16-A

$\overline{VIDEO}$: A low on this line causes the laser diode to emit a beam.

$\overline{SYNC}$: A Laser beam is detected at a high to low transition of this signal.

VL1: LD POWER setting rough adjustment voltage output pin from CPU in PCU.

VL2: LD POWER setting fine adjustment voltage output pin from CPU in PCU.

CO: Laser power monitor comparator output for auto power control of the laser power.

$\overline{VOFF}$: Laser current is forcibly turned off when LOW.

$\overline{PMD}$ (polygonal motor drive):
The polygonal motor starts with a low state of this signal and stops with a high state of the signal.

$\overline{PMTLK}$ (polygonal motor lock)
PLL sync complete signal.
Low: Sync rotation
High: Async rotation
It requires 6 seconds, max., before $\overline{PMTLK}$ becomes low after $\overline{PMD}$ is set low.

| The LDD PWB has the following functions |

(1) The laser diode drive circuit performs auto power control with a software in the CPU of the process control unit (PCU). The voltage outputted from the D/A convertor of the CPU is applied to the two independent voltage pins of rough/fine adjustment to set the drive voltage of the laser diode. The APC feedback laser power is detected by comparing the monitor current of the monitor photo diode included in the laser diode with the reference power in the comparator inside the laser driver, and is outputted to the CPU as logic information.

(2) Beam emit power of the laser diode is maintained at the given level constant at all times.

(3) $\overline{SYNC}$ is issued.
The signal $\overline{SYNC}$ is issued when laser beam is detected, to determine the write start position.

(4) Laser diode beam emit is controlled on and off with the $\overline{VIDEO}$ signal.

(5) VOFF keeps the laser OFF when the power voltage is not stable at rising.

Fig. 12-16-B Laser diode drive (including APC) block diagram

3. PCU soft

3-1. PCU ↔ ICU interface

3-1-1. Video data timing

VIDEO DATA TRANSMISSION TIMING CHART
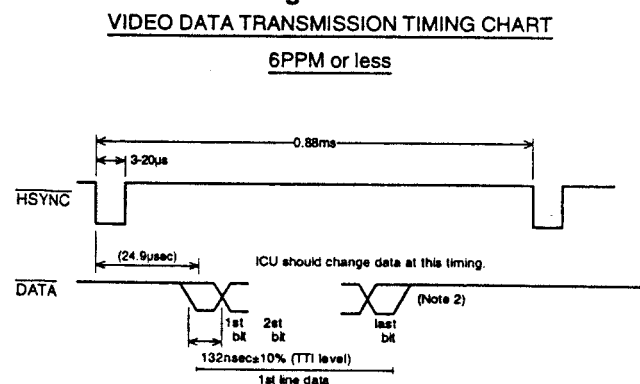
6PPM or less

Fig. 12-17

Note: ICU need to have the following control circuit.

1. Top margin control
   Circuit decided the top margin area from first HSYNC signal per page.

2. Left margin control
   Circuit decided the left margin area from HSYNC signal per line.

3. Jitter control
   Circuit generates HSYNC signal synchronized by the forth clock of the video clock.

DATA to be H level (white) after sending the last bit of line data.
The first HSYNC signal is on the top edge of a page.
The DATA should be more than 50ns minimum. To obtain the positioning of 600 dpi, one DATA width must be 132ns ± 10% at TTL level.
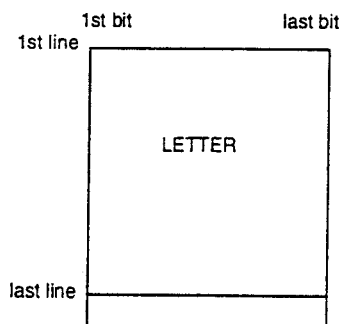
Fig. 12-18

3-1-2. Printing operation sequence

Printing Operation sequence
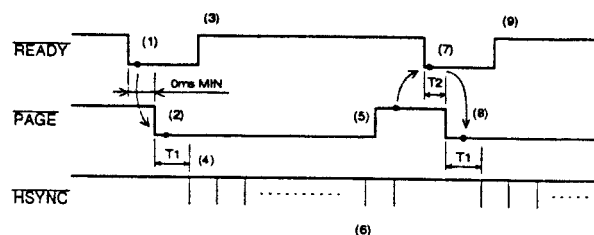
Fig. 12-19

(1) PCU is ready for printing.

(2) Start request from ICU to PCU.

(3) PCU, on receiving PAGE, send PGACK command to ICU, makes the mechanism start and turns READY to H (busy state).

(4) PCU turns on the polygon motor and, after completing the preparatory process starts to send HSYNC pulses.
(The time of T1 for the first printing is changed depending on the processing condition)

(5) ICU, after sending one page of data, turn PAGE to H. PAGE signal should remain low during the complete page printing time. PCU generates maximum 10 HSYNC pulses past PAGE goes high. The maximum number of HSYNC pulses is about 12000 lines if PAGE has been low. Then PCU waits until PAGE goes high.

(6) On completion of last line printing, the printed copy is sent out.

(7) Same as (1).

(8) Start request from ICU to PCU.

(9) Same as (3).

NOTE: (1) The duration of the unstable PAGE pulse, which occurs when the controller power turns ON/OFF, should be 50 ms at maximum.
In case the duration is more than 50 ms, PCU might recognize PAGE is effective.

(2) In order to run the printer at it's maximum speed, the printer has to feed the paper by the prefeed command.

3-1-3. Prime processing sequence

Prime Processing Sequence
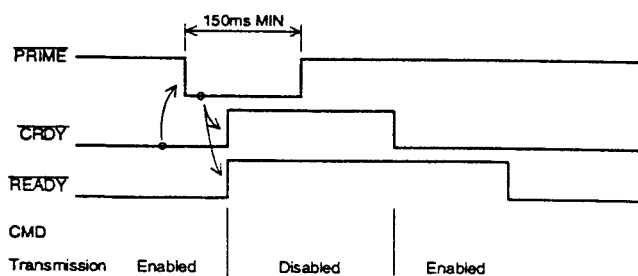
Fig. 12-20

Sequence:

(1) ICU sends PRIM on conditions that it is not sending CMD and CRDY is Low. (The width of PRIM pulse should be 150 ms at minimum)

(2) PCU. after receiving PRIM, makes CRDY and READY High on condition that it is not sending STS.

   Note: PCU is not required to send back a response (STS) to the last CMD from ICU.

(3) PCU makes CRDY Low on completion of the circuit initialization.

(4) PCU makes READY Low when it is ready for printing sequence.

   Note:

   1. PCU can receive PRIM even when PCU is receiving command status.

   2. When PCU has received PRIM during the printing operation, it performs a circuit initialization after completion of the printing sequence.

3-1-4. Power on sequence

Power-On Sequence and Initialize Request
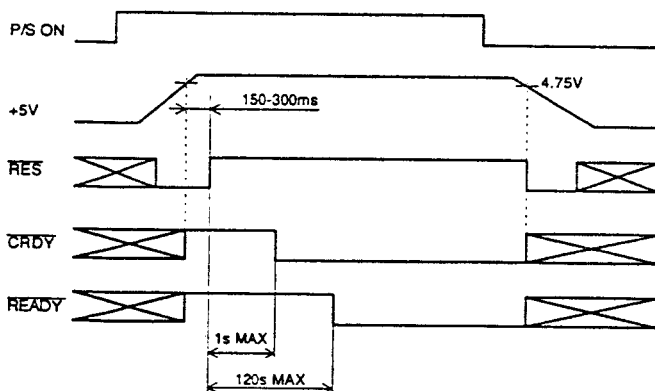
Fig. 12-21

NOTE: While the warm-up time is normally 60 seconds, it will be extended to 120 seconds at maximum for Toner density adjustment in the event of a toner near end or a toner empty.

3-1-5. Function of interface signals

SIGNAL	DIRECTION	FUNCTION
READY	ICU ← PCU (Ready)	L for ready to print. H for warm-up, error detected or printer busy.
PRIM	ICU → PCU (Prime)	Initialize request to PCU. Active L state. When the printer is busy, this request is held until one page printing is completed.
PAGE	ICU → PCU (Page)	Print start request to PCU. It should be L during transmission of one page full of data. When this signal is received and provided that there is no error, PCU will start operation.
HSYNC	ICU ← PCU (Horizontal Sync)	Sync signal for line-by-line printing. This signal indicates start timing of each line.
DATA	ICU → PCU (Data)	Print video data line. L level for black and H level for white. To be kept H after transmission of one line of data.
CMD	ICU → PCU (Command)	Command sending line to PCU. ICU sends various commands to PCU through this line.
STS	ICU ← PCU (Status)	Status sending line from PCU. ICU receives status information from PCU through this line.
SRDY	ICU → PCU (Status Ready)	L for ready to receive STS signal from the PCU. When this signal is H, STS signal is ignored.
CRDY	ICU ← PCU (Command Ready)	L for ready to receive CMD signal from the ICU. When this signal is H, CMD signal is ignored.
RES	ICU ← PCU	Hardware initialize request from PCU. Active L state.

Table 12-5

3-2. Serial interface

3-2-1. Serial interface specification

Baud rate: 9600bps
Character size: 8bits
Start bit: 1bit
Stop bit: 1bit
Parity bit: None
System: Full duplex, async

The PCU serial interface uses M37451 single chip CPU internal serial interface circuit and the command is processed by the interrupt routine program after the PCU has received a byte.

The ICU needs to set the two single byte code transfer interval to 1.5msec. minimum, when sending the control code and status code.

At present, the PCU performs send or receive in an interval of 3msec.

Figure 12-23 shows the table of commands transferred between ICU and PCU.

Exchange timing of CMD and STS signals
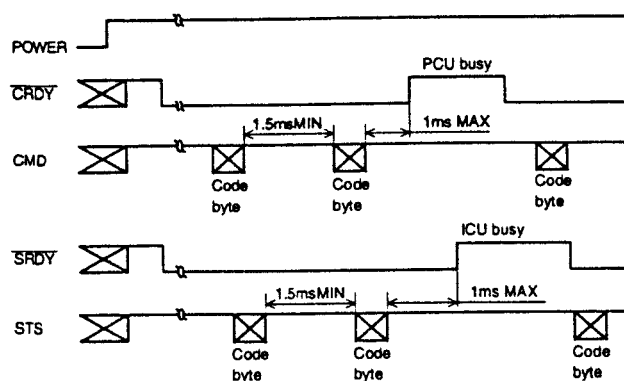
Fig. 12-22

3-2-2. Control code exchange procedure

[Control Code-Exchange Procedures]

CONTROL CODE		PROCEDURE			FUNCTION
HD*	NAME	ICU	LINE	PCU	
80	SSA	80	→		Status Sense A.
			←	80,STSA	ICU reads status A from PCU.
81	SSB	81	→		Status Sense B.
			←	81,STSB	ICU reads status B from PCU.
82	SSC	82	→		Status Sense.
			←	82,STSC, STSD	ICU reads status from PCU.
84	LEDR	84	→		LED Status Read.
			←	84,LEDS	ICU reads status of LED lights on control panel.
85	SWR	85	→		Switch Status Read.
			←	85,SW1S, SW2S	ICU reads status of switches on control panel.
86	PSZR	86	→		Paper Size Read.
			←	86,SIZE	ICU reads status of paper size.
8A	LFOV	8A	→		Life over
			←	8A,LIFE	ICU reads status of life over from PCU.
8F	ROMNO	8F	→		PCU ROM Revision number
			←	8F, ROMNO	ICU reads the revision number of the PCU software.
90	SWSCHG		←	90,SW1S, SW2S	Switch Status Changed. PCU sends switch status to ICU when there is a status change of switches on control panel.

CONTROL CODE		PROCEDURE			FUNCTION
HD*	NAME	ICU	LINE	PCU	
92	PPOUT		←	92	Paper printed out. PCU sends status to ICU when paper is out on the output tray.
93	PCUERR		←	93	PCU Error. This code indicates error detected in PCU.
94	PCHSTD		←	94	Paper size change of the upper tray.
96	PGACK		←	96	Acknowledge of page signal.
98	ERRRV		←	98	ERROR Recovery Command.
A1	TRSELT	A1, TRAY	→		Paper Tray select PCU selects paper tray by TRAY.
A3	PMSTT	A3	→		Polygon Motor Start. Polygon motor is also started by PAGE signal.
A4	PERST	A4	→		PCU Error Reset. PCU resets PCU errors that are resecttable.
A5	BUZZER	A5	→		Buzzer Buzzer beeps for 0.3sec.
A6	BZON	A6	→		Buzzer on Buzzer is beeping until A7 command is send.
A7	BZOFF	A7	→		Buzzer off
B0	LEDON	B0,LEDS	→		LED Indicator On. PCU turns on LED lights according to LEDS.
B1	LEDBK	B1,LEDS	→		Operation Panel LED Blinking Start.
C1	LCDCDP	C1,DDA, CGA	→		LCD Character Display. Character addressed by CGA in character generator is displayed on LCD cell addressed by DDA.
C2	LCDCBK	C2,DDA	→		LCD Character Blinking start. Character on LCD cell addressed by DDA starts Blinking.
C3	LCDCBOF	C3,DDA	→		LCD Character blinking stop. Character on LCD cell addressed by DDA stops Blinking.

JX-9460PS

CONTROL CODE		PROCEDURE			FUNCTION
HEX	NAME	ICU	LINE	PCU	
C4	LCDDCL	C4	→		LCD Display Clear. All characters on LCD panel are cleared.
C5	LCDPOS	C5,DDA	→		LCD Positioning. ICU designates the position on LCD cell addressed by DDA.
C6	LCDCHR	C6,CGA1,CGA2, ... CGAn,NUL(00)	→		LCD Character strings ICU sends the character strings to LCD panel.
C7	LCDDL	C7,CGA,BD0,BD1 ... BD6	→		Download the LCD character data ICU sends dot data of the character.

* - Control code in 2-digits hexadecimal number.
LINE: → for CMD line, and ← for STS line.

Table 12-6

[Status Codes, STSA to STSD]

Bit	STSA, PCU Status	STSB, Operator Call	STSC, Hardware Error (1)	STSD, Hardware Error (2)	LIFE, Life over
D7	0	0	0	0	0
D6	Warm-up	Toner Empty	PCU ROM Error	Optical System Error	Photo-conductor Cartridge Life over
D5	Operator Call	Paper Empty	PCU RAM Error	Main Motor Defective	0
D4	Hardware Error	Paper Jam	NV-RAM Error	Polygon Motor Defective	0
D3	Life over	Printer Open	Serial Communication Error	Heater High Temperature	0
D2	Manual Feed SW ON	Photo-conductor near end	0	Heater Low Temperature	0
D1	PCU Diagnostic Test	Developer near end	0	Thermistor open	0
D0	Toner mixing mode	0	0	0	0

Logic One (1) for Set, and Logic Zero (0) for Reset.

Table 12-7

[Status Codes: LEDS, and SW1S.]

Bit	LEDS, LED Light Status	SW1S, Switch Status	SW2S, Switch Status
D7	0	FORM FEED	0
D6	ERROR	TEST PRINT	0
D5	MANUAL	MENU	0
D4	ONLINE	LINE	0
D3	DATA	△	0
D2	0	▽	0
D1	0	CONTINUE	0
D0	0	ENTER	0

Logic One (1) for switch ON or LED Light lit;
Logic Zero (0) for switch OFF or LED light OFF.

Table 12-8

[Status Code: SIZE, TRAY]

BIT	SIZE PAPER SIZE STATUS	SIZEDEL PAPER SIZE DOUBLE	OPTION OPTIONAL STATUS
D7			0
D6	INPUT TRAY PAPER CODE	UPPER TRAY PAPER CODE	MANUAL FEED
D5			TRAY
D4			0
D3	0	0	0
D2	0	0	0
D1	0	0	0
D0	0	0	0

Table 12-9

PAPER CODE				SIZE
D7	D6	D5	D4	
0	0	0	0	NO TRAY
0	0	0	1	LEGAL
0	0	1	0	LETTER
0	0	1	1	—
0	1	0	0	ENVELOPE
0	1	0	1	A4
0	1	1	0	—
0	1	1	1	—

Table 12-10

[Status Code, DDA]

Cell No.	DDA✳	Cell No.	DDA✳
1	00	9	08
2	01	10	09
3	02	11	0A
4	03	12	0B
5	04	13	0C
6	05	14	0D
7	06	15	0E
8	07	16	0F

✳: Status Code in 2-digits hexadecimal number.

Table 12-11
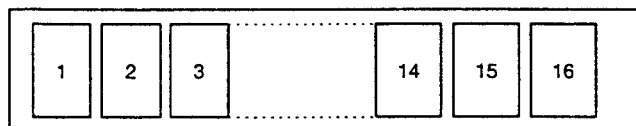
Fig. 12-23

Status Code, CGA and Display Character.

✳1: High-order   ✳2: Low-order   ✳: Prohibition of Input

Table 12-12

3-3. Timing chart

3-3-1. Preliminary rotation timing (Warming-up)

Before starting the image forming process, preliminary rotation cycle is performed to initialize the OPC drum state. Process control differs from the previous process completion state (normal completion or abnormal completion).

There are two types of abnormal completion.

(1) During the main motor rotation, an error other than toner empty, life over, and paper empty occurs.

(2) The power is cut off during the main motor rotation.

The preliminary rotation cycle is performed in the following two cases:

(1) When the power is supplied. (Except for diag mode)

(2) When an error state is reset. (A4 error reset command is outputted from ICU.)

Timing chart of normal completion and abnormal completion is shown below:

[Normal completion]
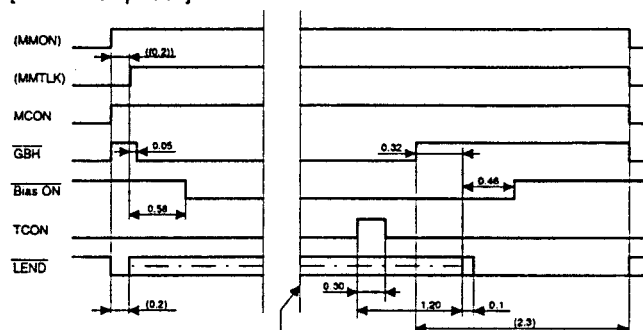
[Abnormal completion]
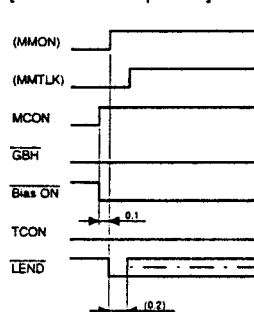
Fig. 12-24

3-3-2. Print cycle timing chart

READY
PAGE
MMD
(MMTLK)
MCON
GBH
Bias ON
TCON
LEND
PRSTT
PUSU
PSC
Pin
Pout
PUSL
Envelope Cassette
PUSL/(PUSL)
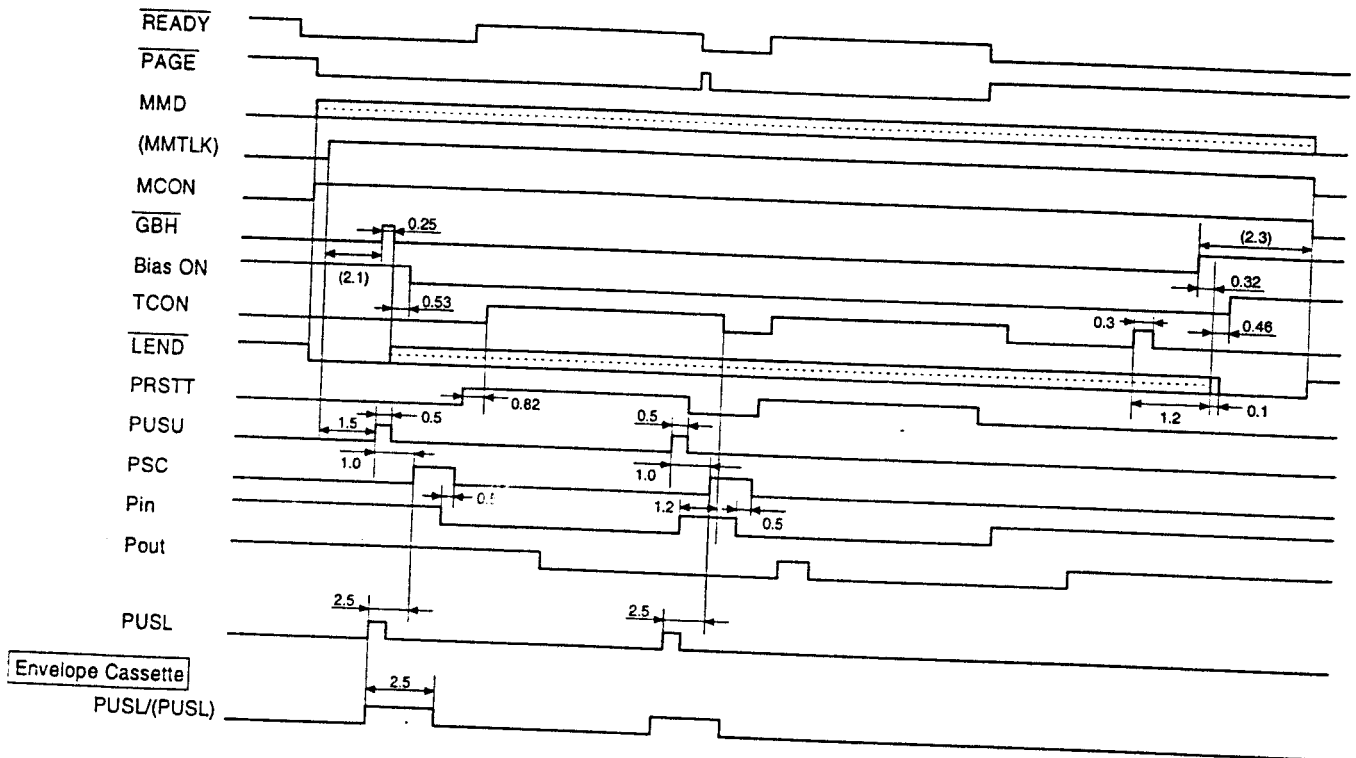
Fig. 12-25

3-4. Error detection specifications

The error criteria for the printer engine (except for ICU) are as follows:

(1) Paper jam

1. The paper exit sensor is not turned on within 4.5 sec after turning off PSC (paper stop clutch).
2. The paper exit sensor is not turned on within 4.8 sec after turning off the paper in sensor.
3. The paper in sensor is not turned off within 8.8 sec after turning off the paper in sensor.
4. The paper in sensor is not turned on within 5.1 sec after turning on PUSU (upper cassette paper pick up solenoid).
5. The paper exit sensor is turned on except during the print cycle.

(2) Paper out

1. No paper in the cassette.
2. No cassette installed.

(3) Cover open

1. When the safety switch is off.

(4) Drum cartridge life over
× Refer to [2]-4

(5) DV cartridge life over
× Refer to [2]-4

(6) SERVICE P1 (PCU ROM) error

1. ROM check error occurs after turning on the power.

(7) SERVICE P2 (PCU ROM) error

1. PCU RAM read/write check error occurs after turning on the power.

(8) SERVICE P3 (NVRAM error)

1. NVRAM check error occurs after turning on the power.

(9) SERVICE P4 (Serial transmission error)

1. An over run error or framing error occurs when CMD from ICU is received by PCU.

(10) SERVICE C1 (Optical system error)

1. Abnormality in APC.
2. SYNC is not detected.

(11) SERVICE C2 (Main motor error)

1. When the main motor is stopped or out of order for 3 sec or more.
(The main motor rotation is detected by the toner sensor ripple.)

(12) SERVICE C3 (Polygon motor error)

1. PMTLK does not become LOW within 15 sec after turning PMD to LOW.

(13) SERVICE C4 (Heater high temperature error)

1. Fuser temperature exceeds 240 degrees C.

(14) SERVICE C5 (Heater low temperature error)

1. Thermistor temperature falls under 85 degrees C or warm-up operation is not compled in 2 minutes.
2. Abnormality in heater control signal (HLON, HLOFF).

(15) SERVICE C6 (Thermistor open)

4. Power unit

In the power unit, the AC input is directly rectified and smoothed, and the voltage is transformed by the transformer in the switching system. Then it is rectified and smoothed again to obtain DC voltages (+24V, +5V). This power unit transforms +24V outputted from the power unit in the switching (chopper) system to provide +5V DC.
Fig. 1 shows the block diagram, and circuit descriptions are given in the following.
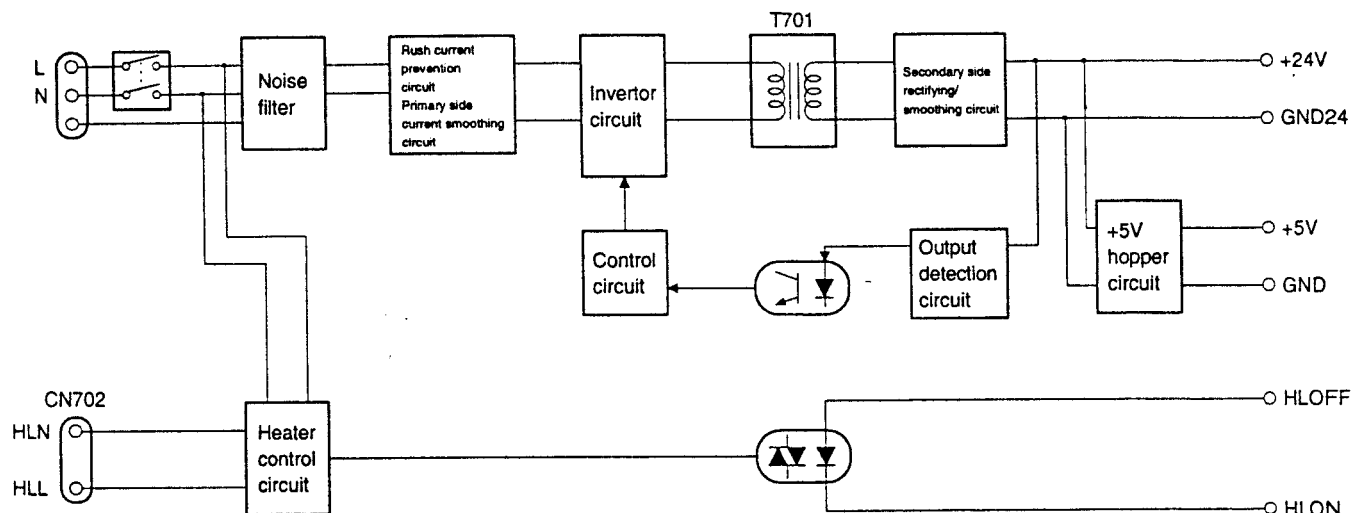
Fig. 12-26

4-1. Noise filter circuit

This circuit reduces normal mode noise and common mode noise from the AC line. The normal mode noise is the noise overlapped in the AC line or the output line, and is attenuated by L701, L702, C701 and C702.
The common mode noise is the noise generated between the AC line and GND, and is passed to GND through C705 and C706.
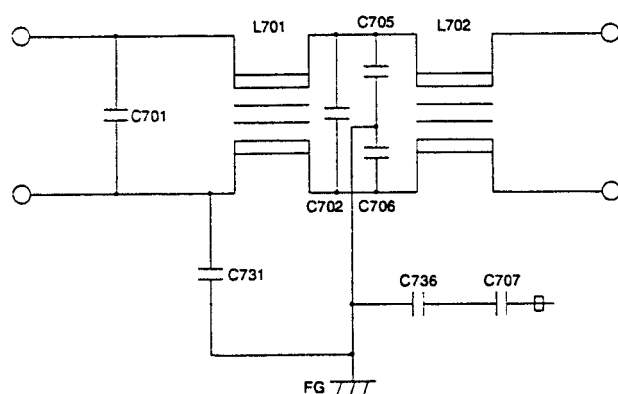
Fig. 12-27

4-2. Rush current prevention circuit

Since AC input is directly rectified and smoothed, a great rush current may be generated by the charging current flowing through the capacitor and the switch contacts may be damaged. To prevent this, power thermistor TH701 is provided between rectifier BD701 and capacitor C709 to suppress a rush current. T701 has an characteristic which reduces resistance when temperature rises. Its normal resistance value is nearly 0 ohm.

4-3. Primary side rectifying/smoothing circuit

This is a full wave rectifying circuit which converts AC voltage of 50/60Hz into a DC voltage. The solid line and the dotted line shows the charging path of C709.
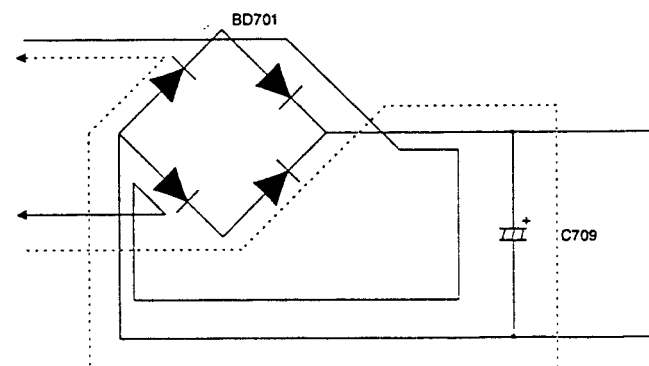
Fig. 12-28

4-4. Invertor circuit

In the flyback convertor system, FET connected in series to the convertor transformer performs ON/OFF operation. Energy accumulated in the transformer during ON period is discharged to the secondary side during OFF period. The DC voltage from the rectifying/smoothing circuit is converted into a switching pulse by the switching operation of Q701 controlled by the signal from the control circuit. Thus high frequency power is supplied to the secondary side by T701.
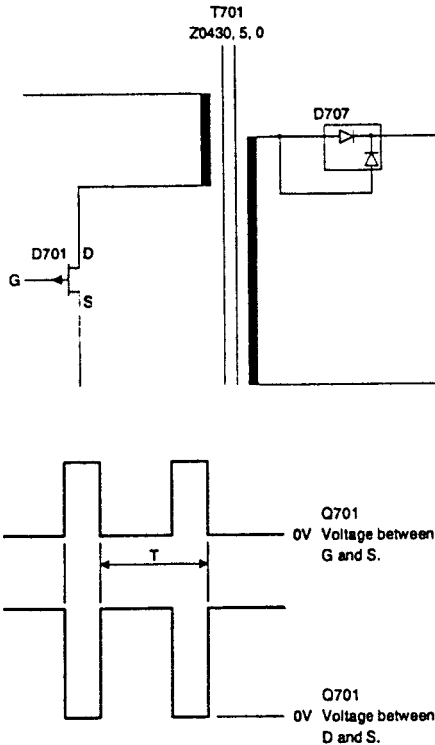
Fig. 12-29

4-5. Secondary side rectifying/smoothing circuit

The voltage of high frequency pulse generated in the invertor circuit is dropped by convertor transformer T701, rectified by the high frequency diode, and smoothed by C720 and C721.
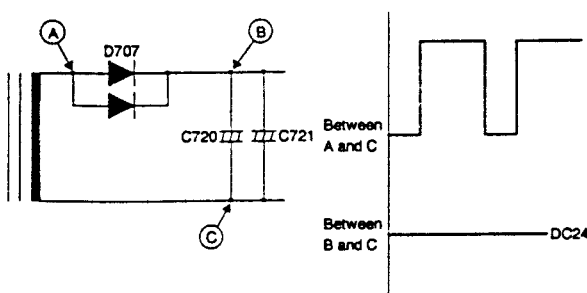
Fig. 12-30

4-6. Control circuit

This circuit operates in the PWM (pulse width modulation) control system by controlling the primary side using a power MOSFET as the switching element. The secondary side output voltage, therefore, is detected by the output detecting circuit, and the detection signal is passed through photocoupler PC701 to control IC (IC703) to stabilize the output voltage.
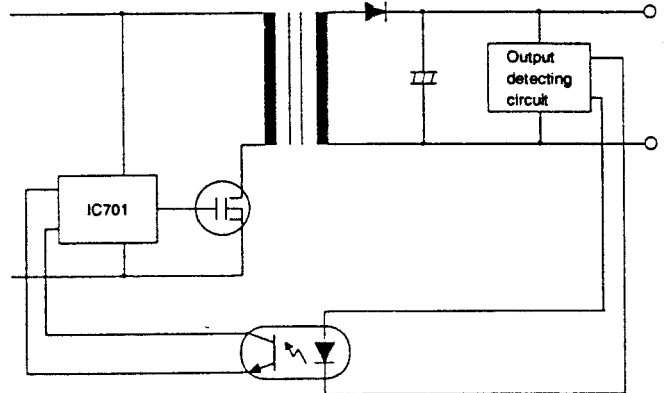
Fig. 12-31

4-7. Overcurrent protection circuit

Resistor R704 is connected to $\ominus$ line of the primary side. When an overcurrent is generated, it is detected and the signal is sent to the control IC (IC703) to reduce the output in the secondary side.
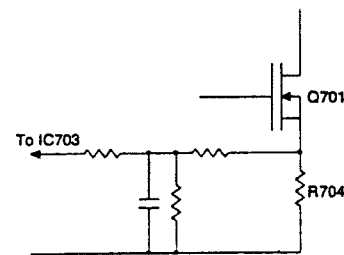
Fig. 12-32

4-8. Output detecting circuit

The 24V system output voltage is detected by R721, VR701, and R722. The detected output voltage is compared with the reference voltage in the IC701. That is, a change in the output voltage is transmitted the control IC (IC701) in the primary side by changing the cathode current of IC701 and the resultant PC701 light emitting section current. The output voltage is controlled in this manner.

Fig. 12-33

4-9. Overvoltage detecting circuit
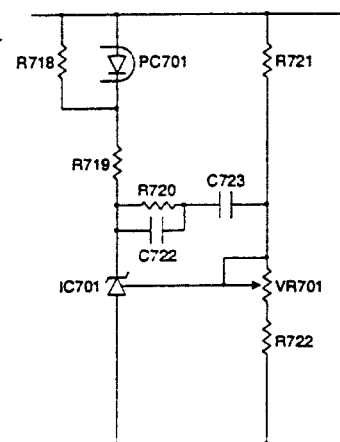
The 24V system detects overvoltage with ZD707, and the 5V system with ZD708. Then SCR701 is turned on to stop the output.

Fig. 12-34

4-10. Chopper circuit (5V output)

The chopper circuit is shown in Fig. 12-39. The solid line shows the current when Q705 is turned on. The dotted line shows the current generated by counter-electromotive force produced in L705 when the circuit is turned off.
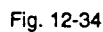
When Q705 is turned on/off in the waveform shown in Fig. 12-39 in the switching frequency determined by IC702, the supplied rectangular waveform voltage is integrated and smoothed by L705, C727, and C728 to convert 24V into 5V. The detection signal from the voltage detecting circuit (R741, VR702, R743) is sent to IC702 to control on/off period of Q704 to stabilize the output.

Fig. 12-35
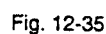
[13] Interface controller unit (ICU)

1. General

This controller uses an AM29005 as the CPU to provide operating frequency of 14MHz, allowing access to the instruction ROM without wait.

The peripheral circuit which operates the CPU is composed of interface LSI of gate array chip. The LSI includes the address decoder, the I/F circuits, the DRAM controller, the ROM control, and the FIFO control.

The standard equipment includes the Centronics I/F which connects with the host, and the VIDEO I/F which connects the PCU.The RS232C I/F and the Apple talk I/F are optionally available to allow connection with the host. The other optional equipment includes the 1-slot font card, the 2-slot expansion memory, and the PS board.

In addition, this controller is equipped with the HRT function which increases resolution of 300DPI data to 600DPI. This function is performed with the gate array and FIFO.

2. Hardware composition

2-1. Block diagram

ICU CONFIGURATION   JX9460

EX memory: Expansion memory
EX I/O port: Apple talk/RS232C interface board
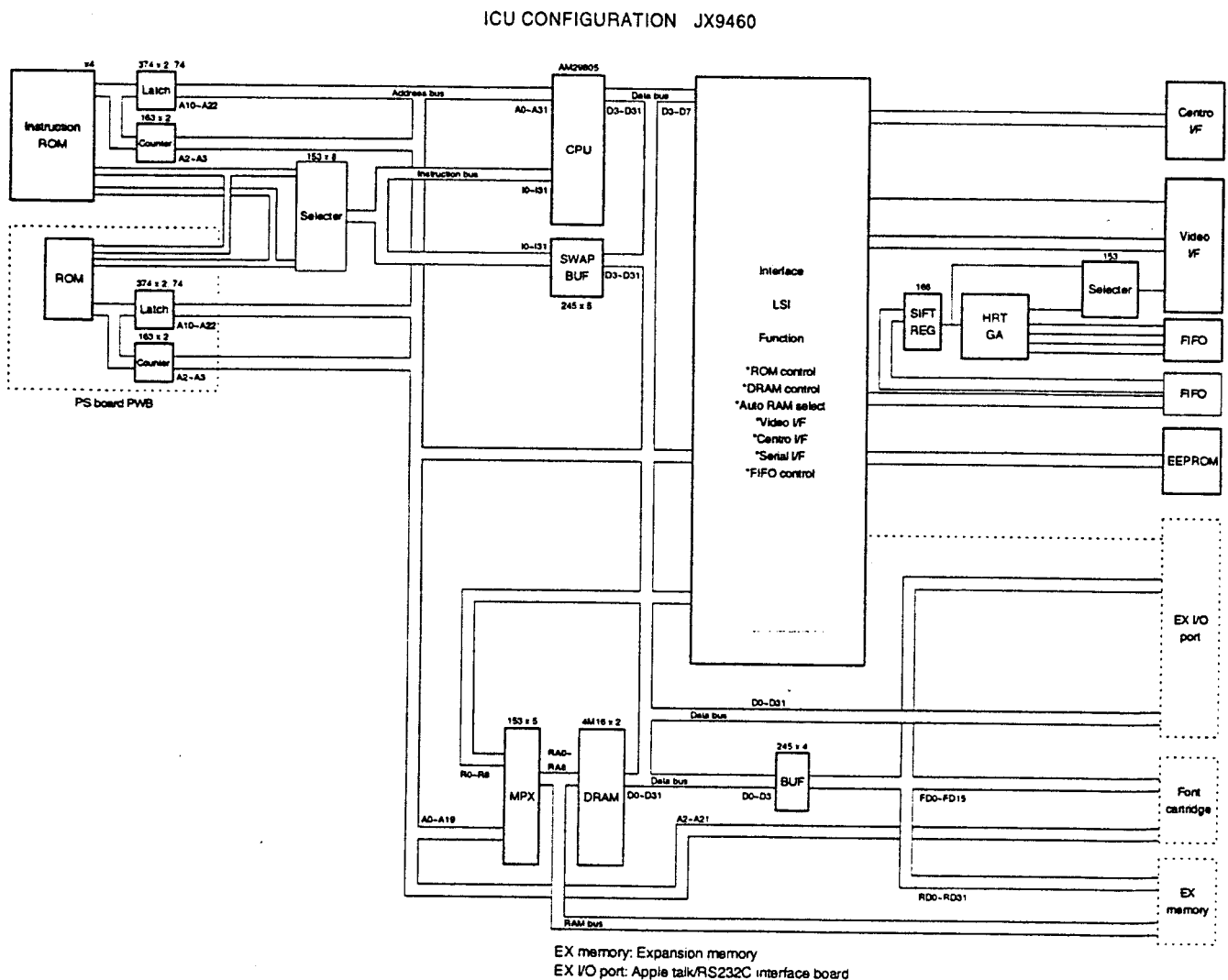
Fig. 13-1

2-2. Internal composition

(1) CPU
AM29005

(2) ROM composition
4M ROM (x16) 4 pcs. Total Max. 2MB
Including the program, the resident fonts, and the outline data.

(3) RAM composition
4M DRAM (x16) 2 pcs. Total Max. 1MB

(4) EEPROM
4Kbit (256 × 8) serial interface system
Stores job size, paper size, font data, and I/F setting.

(5) FIFO (x2)
5K × 8bit
1. Data from the page memory are written and read in synchronization with VIDEO CLK of PCU.
2. Eight lines are stored for the HRT function. Access is controlled by the gate array.

(6) Interface LSI
(1) CPU peripheral circuit
(2) ROM access circuit
(3) DRAM controller
(4) Automatic RAM assignment circuit
(5) FIFO control circuit
(6) I/F circuit
   Centronics I/F
   VIDEO I/F
   RS232C I/F
(7) Versatile I/O port
(8) Jitter circuit
(9) Left margin adjustment circuit

(7) HRT gate array

(8) Current consumption
5V/2A

(9) Reference dimension
295 × 152 mm

(10) Option
(1) Font card
(2) Expansion memory
(3) PS board
(4) Expansion board
   RS232C board
   RS232C, Apple talk board

3. Memory map

3-1. Memory map
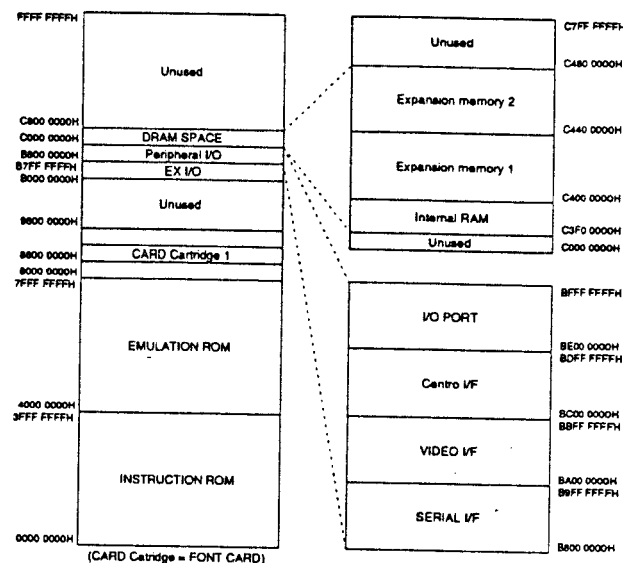
Fig. 13-2

3-2. Port table

Port name	Address	Bit	Signal name	Function
Left margin	OUT BE000008H	D7	LM7	Left margin set value 1 count=4 dot (300 DPI) 1 count=8 dot (600 DPI)
		D6	LM6	
		D5	LM5	
		D4	LM4	
		D3	LM3	
		D2	LM2	
		D1	LM1	
		D0	LM0	
Effective print area 1	OUT BE00000CH	D7	LA7	Effective print area LOW DATA set value 300 DPI: 3FH 600 DPI: 7FH
		D6	LA6	
		D5	LA5	
		D4	LA4	
		D3	LA3	
		D2	LA2	
		D1	LA1	
		D0	LA0	
Effective print area 2	OUT BE000010H	D7	UA7	Effective print area UPPER DATA set value 300 DPI: 01H 600 DPI: 02H
		D6	UA6	
		D5	UA5	
		D4	UA4	
		D3	UA3	
		D2	UA2	
		D1	UA1	
		D0	UA0	
FIFO DATA	OUT BE000014H	D7	VD7	FIFO output signal
		D6	VD6	
		D5	VD5	
		D4	VD4	
		D3	VD3	
		D2	VD2	
		D1	VD1	
		D0	VD0	

Port name	Address	Bit	Signal name	Function
Select port	OUT BE000018H	D7		Reserved.
		D6		
		D5	VFCKSEL	300DPI:1, 600DPI:0
		D4	FCWAIT	WAIT1:0, WAIT2:1
		D3	DPISEL	300DPI:0, 600DPI:1
		D2	LMSEL	300DPI:0, 600DPI:1
		D1	THRU	300DPI:0, 600DPI:1
		D0	CLKSEL	300DPI:1, 600DPI:1

SCAN01	SCAN02	SCANI1	SCANI2	Function
0	0	0	0	Both PS and EXIO are ON.
0	0	1	0	Only EXIO is ON.
0	0	0	1	Only PS is ON.
0	0	1	1	Both PS and EXIO are OFF.
0	1	0	0	Reserved.
0	1	1	0	Reserved.
0	1	0	1	Reserved.
0	1	1	1	Reserved.
1	0	0	0	RS, APPLE TALK board
1	0	1	0	RS232C board
1	0	0	1	Reserved.
1	0	1	1	Reserved.
1	1	0	0	Reserved.
1	1	1	0	INPUT PRIM ON
1	1	0	1	Reserved.
1	1	1	1	Reserved.

Port name	Address	Bit	Signal name	Function	
Versatile-use port	OUT BE000000H	D0	EXIN2	000: Reserved. 001: 1MB 010: 2MB 011: Reserved. 100: 4MB 101: Reserved. 110: Reserved. 111: Reserved.	FRONT EXM capacity setting
		D1	EXIN1		
		D2	EXIN0		
		D3	HRTON	HRT control ON signal	
		D4	SRDY	VIDEO I/F SRDY output signal	
		D5			
		D6	SCAN01	Input port scan enable signal	
		D7	SCAN02	Input port scan enable signal	
	IN BE000000H	D7		Fixed to 0.	
		D6			
		D5	DATA IN	EEPROM input data	
		D4	CRDY	VIDEO I/F CRDY input signal	
		D3	SCANI1	Input port scan input signal	
		D2	SCANI2	Input port scan input signal	
		D1	FCON1	Font card 1 ON signal	
		D0	FCON2	Font card 2 ON signal	
	OUT BE000004H	D7	SINTRCLR	SYNC interrupt CLR	
		D6			
		D5	BSLCT2	000: 19200BAUD 001: 9600BAUD 010: 4800BAUD 011: 2400BAUD 100: 1200BAUD 101: 600BAUD 110: 300BAUD 111: Reserved.	Serial I/F baud rate setting
		D4	BSLCT1		
		D3	BSLCT0		
		D2	DATA OUT	EEPROM DATA output signal	
		D1	EECS	EEPROM CS signal	
		D0	EECLK	EEPROM CLK signal	
Centronics I/F	IN BC000000H	D7		Fixed to 0.	
		D6			
		D5			
		D4			
		D3			
		D2			
		D1	SLCT IN	SLCT IN input signal	
		D0	AUTO FEED	AUTO FEED input signal	
	OUT BC000000H	D7		Reserved.	
		D6			
		D5			
		D4	FAULT	Alarm	
		D3	SLCT	Online/Offline	
		D2	PE	Paper error	
		D1	ACK	Acknowledge signal	
		D0	BUSY CLR	BUSY signal CLR	
	IN BC000004H	D7	DT8	Centronics input signal	
		D6	DT7		
		D5	DT6		
		D4	DT5		
		D3	DT4		
		D2	DT3		
		D1	DT2		
		D0	DT1		

JX-9460PS

Port name	Address	Bit	Signal name	Function
VIDEO I/F	OUT BA000000H	D7	CMD8	Send data (CMD)
		D6	CMD7	
		D5	CMD6	
		D4	CMD5	
		D3	CMD4	
		D2	CMD3	
		D1	CMD2	
		D0	CMD1	
	IN BA000000H	D7	STS8	Receive data (STS)
		D6	STS7	
		D5	STS6	
		D4	STS5	
		D3	STS4	
		D2	STS3	
		D1	STS2	
		D0	STS1	
	OUT mode BA000004H	D7	S2	Stop bit
		D6	S1	01: 1 bit (Fixed)
		D5	EP	Parity 1: EVEN 0: ODD
		D4	Parity EN	No parity, Fixed to 0.
		D3	L1	Character length
		D2	L2	11: 8 bit (Fixed)
		D1	B1	Baud rate division rate
		D0	B0	11: (Fixed to 1/64.)
	OUT command BA000004H	D7	EH	Reserved.
		D6	IR	Internal reset
		D5	RTS	PRIM signal
		D4	ER	Error reset
		D3	SBRK	SEND BRAKE fixed to 0.
		D2	RxE	Receive enable
		D1	DTR	PAGE signal
		D0	TxEN	Send enable signal
	IN status BA000004H	D7	DSR	READY signal
		D6	SYNDET/BD	Reserved.
		D5	FE	Framing error
		D4	OE	Overrun error
		D3	PE	Parity error
		D2	TxE	Send buffer empty
		D1	RXRDY	Receive enable (receive interruption)
		D0	TxRDY	Send enable
RS232C	OUT B800000H	D7	SD8	Send data
		D6	SD7	
		D5	SD6	
		D4	SD5	
		D3	SD4	
		D2	SD3	
		D1	SD2	
		D0	SD1	
	IN B8000000H	D7	RD8	Receive data
		D6	RD7	
		D5	RD6	
		D4	RD5	
		D3	RD4	
		D2	RD3	
		D1	RD2	
		D0	RD1	

Port name	Address	Bit	Signal name	Function
RS232C	OUT mode B8000004H	D7	S2	Stop bit
		D6	S1	00: Reserved.
				01: 1 bit
				10: Reserved.
				11: 2 bit
		D5	EP	Parity 1: EVEN 0: ODD
		D4	Parity EN	Parity enable flag
		D3	L1	Charater length
		D2	L2	00: Reserved.
				01: Reserved.
				10: 7 bit
				11: 8bit
		D1	B1	Baud rate division rate
		D0	B0	10 (Fixed to 1/16.)
	OUT command B8000004H	D7	EH	Reserved.
		D6	IR	Internal reset
		D5	RTS	REQUEST TO SNED
		D4	ER	Error reset
		D3	SBRK	SEND BREAK fixed to 0
		D2	RxE	Receive enable
		D1	DTR	Data set ready signal
		D0	TxEN	Send enable
	IN status B8000004H	D7	DSR	Data set ready signal
		D6	SYNDET/BD	Reserved.
		D5	FE	Framing error
		D4	OE	Overrun error
		D3	PE	Parity error
		D2	TxE	Send buffer empty
		D1	RXRDY	Receive enable (Receive interruption)
		D0	TxRDY	Send enable (Send interruption)
APPLE TALK	B port OUT B0000008H	D7	BD7	Reserved.
		D6	BD6	
		D5	BD5	
		D4	BD4	
		D3	BD3	
		D2	BD2	
		D1	BD1	
		D0	BD0	
	B port IN B0000008H	D7	BD7	Reserved.
		D6	BD6	
		D5	BD5	
		D4	BD4	
		D3	BD3	
		D2	BD2	
		D1	BD1	
		D0	BD0	
	A port OUT B000000CH	D7	AD7	WRITE data
		D6	AD6	
		D5	AD5	
		D4	AD4	
		D3	AD3	
		D2	AD2	
		D1	AD1	
		D0	AD0	

Port name	Address	Bit	Signal name	Function
APPLE TALK	A port IN B000000CH	D7	AD7	READ data
		D6	AD6	
		D5	AD5	
		D4	AD4	
		D3	AD3	
		D2	AD2	
		D1	AD1	
		D0	AD0	
	B port OUT B0000000H	D7	BD7	Reserved.
		D6	BD6	
		D5	BD5	
		D4	BD4	
		D3	BD3	
		D2	BD2	
		D1	BD1	
		D0	BD0	
	B port IN B0000000H	D7	BD7	Reserved.
		D6	BD6	
		D5	BD5	
		D4	BD4	
		D3	BD3	
		D2	BD2	
		D1	BD1	
		D0	BD0	
	A port OUT B0000004H	D7	AD7	WRITE command
		D6	AD6	
		D5	AD5	
		D4	AD4	
		D3	AD3	
		D2	AD2	
		D1	AD1	
		D0	AD0	
	A port IN B0000004H	D7	AD7	READ command
		D6	AD6	
		D5	AD5	
		D4	AD4	
		D3	AD3	
		D2	AD2	
		D1	AD1	
		D0	AD0	

4. Circuit description

4-1. CPU

The AM29005 RISC chip is a low cost version of a 32-bit AM29000 microprocessor that has a 3-bus architecture. Using this architecture, the data bus is isolated from the instruction bus to allow using it in the burst mode to enhance a high speed operation by setting the address bus free. As 32 bits comprise an address, there are spaces of 4GB available. As its internal consists of four stage pipe line, a single cycle is needed to execute one instruction.

AM29005

Left side pins:

Pin	Name
1	DRDY
2	CDA
3	INCLK
4	PWRCLK
5	SYSCLK
6	GND
7	VCC
8	GND
9	RESET
10	CNTL0
11	CNTL1
12	TEST
13	I31
14	I30
15	I29
16	I28
17	I27
18	I26
19	I25
20	I24
21	GND
22	VCC
23	I23
24	I22
25	I21
26	I20
27	I19
28	I18
29	I17
30	I16
31	I15
32	I14
33	I13
34	I12
35	I11
36	I10
37	I9
38	I8
39	I7
40	I6
41	I5
42	I4

Top side pins:

Pin	Name
168	GND
167	BREQ
166	PEN
165	DBACK
164	DERR
163	IERR
162	IRDY
161	IBACK
160	WARN
159	INTR3
158	INTR2
157	INTR1
156	INTR0
155	TRAP1
154	TRAP0
153	GND
152	VCC
151	GND
150	VCC
149	VCC
148	BINV
147	IBREQ
146	DBREQ
145	BGRT
144	IREQ
143	PIA
142	PDA
141	DREQ
140	R/W
139	LOCK
138	DREQT1
137	DREQT0
136	MSERR
135	STAT2
134	STAT1
133	STAT0
132	IREQT
131	SUP/US
130	OPT2
129	OPT1
128	OPT0
127	GND

Right side pins:

Pin	Name
126	GND
125	GND
124	A2
123	A3
122	A4
121	A5
120	A6
119	A7
118	A8
117	A9
116	VCC
115	VCC
114	MPGM1
113	MPGM0
112	A0
111	A1
110	A10
109	A11
108	A12
107	A13
106	A14
105	VCC
104	VCC
103	GND
102	A15
101	A16
100	A17
99	A18
98	A19
97	A20
96	A21
95	A22
94	A23
93	A24
92	A25
91	A26
90	A27
89	A28
88	A29
87	A30
86	A31
85	GND

Bottom side pins:

Pin	Name
43	VCC
44	I3
45	I2
46	I1
47	GND
48	I0
49	D0
50	D1
51	D2
52	D3
53	D4
54	D5
55	D6
56	D7
57	D8
58	D9
59	D10
60	D11
61	D12
62	D13
63	D14
64	VCC
65	GND
66	D15
67	D16
68	D17
69	D18
70	D19
71	D20
72	D21
73	D22
74	D23
75	D24
76	D25
77	D26
78	D27
79	D28
80	D29
81	D30
82	D31
83	GND
84	VCC

(1) Instruction burst accessing

The burst mode allows to execute an instruction without a wait, except that it needs to have two to three waits when an instruction address is sent, because it needs to latch the address.

CPUCLK==]

IREQ==]

IBREQ==]

IRDY==]

IBACK==]

A (0:31) =H]

| * Unpredicable | N | Unpredicable |
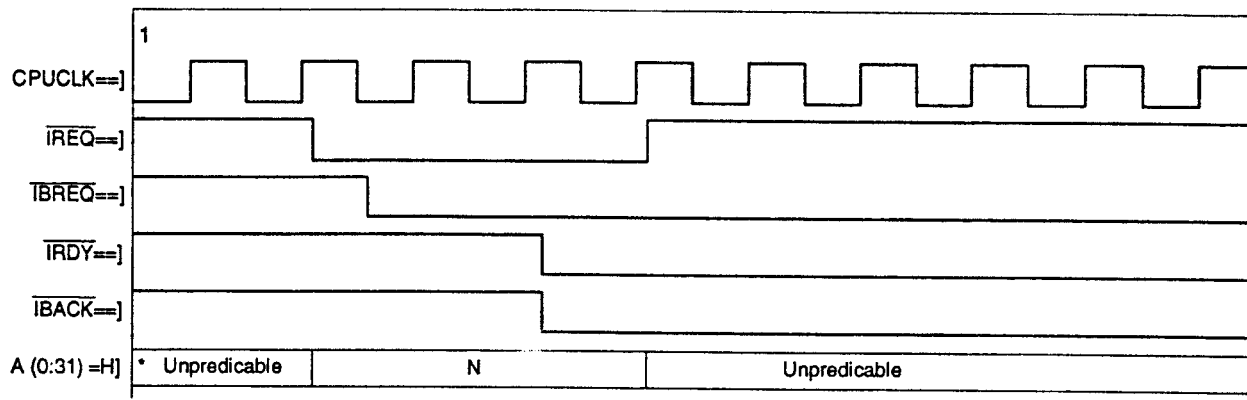
Fig. 13-4

(2) Data bus accessing (DRAM)

A single wait is needed as a 70ns chip is used for the DRAM.

CPUCLK==]

DREQ==]

DRDY==]

D (0:31) =H]

| * High impedance | Established data N | High impedance | Established data M | High impedance |
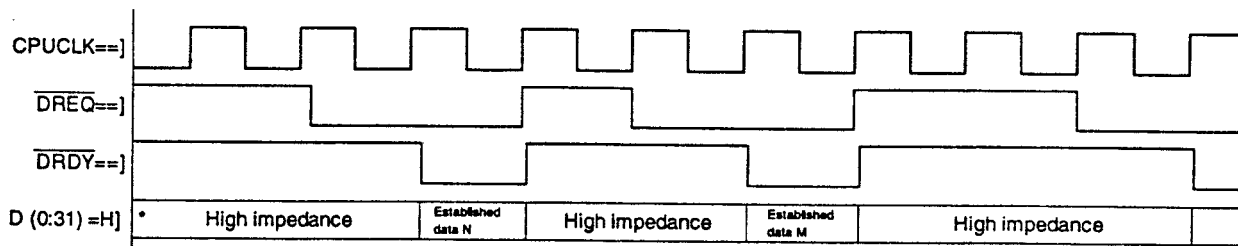
Fig. 13-5

(3) Data bus accessing (Centronics interface, general I/O port)

Access can be performed without wait by internal operations of the interface LSI.

CPUCLK==]

DREQ==]

DRDY==]

D (0:31) =H]

| * High impedance state | Established data L | High impedance state | Established data M | High impedance state | Established data N |

Fig. 13-6

(4) Data bus accessing (video interface, RS232C interface)

Access needs two waits by SIO in the interface LSI.

CPUCLK==]

DREQ==]

DRDY==]

D (0:31) =H]

| * High impedance state | Established data N | High impedance state | Established data M | High impedance state |

Fig. 13-7

DREQT1, OPT0~2: A combination of these signals can show the kind of data access.

IREQ: Instruction access request signal. An active state of the signal shows that the address is an instruction address.

IBREQ: Burst mode request signal for instruction access.

IBACK: The memory system informs IBREQ that the burst mode is possible.

IRDY: When this signal is active, the data on the data bus is received by the input buffer at a low to high transition of CPUCLK.

DREQ: Data access request signal. An active state of the signal shows that the address is the data address.

DBREQ: Burst mode request signal to data access.

DBACK: The memory system informs to DBREQ that the burst mode is possible.

R/W: Shows the direction of data access. Reading when high or writing when low.

BINV: The rising edge of CPUCLK is sent : a late step of a cycle to inform that the cycle begu: in this cycle is invalid.

STAT0~2: Shows the state of immediately preceding execution by a combined state of signals.

STAT2	STAT1	STAT0	Established data state
0	0	0	At HALT or STEP
0	0	1	Pipe line hold
0	1	0	Load test instruction or halt/freeze
0	1	1	Wait mode
1	0	0	Return from interrupt
1	0	1	Interrupt
1	1	0	Discontinuous instruction fetch
1	1	1	Execution mode

4-2. ROM address select

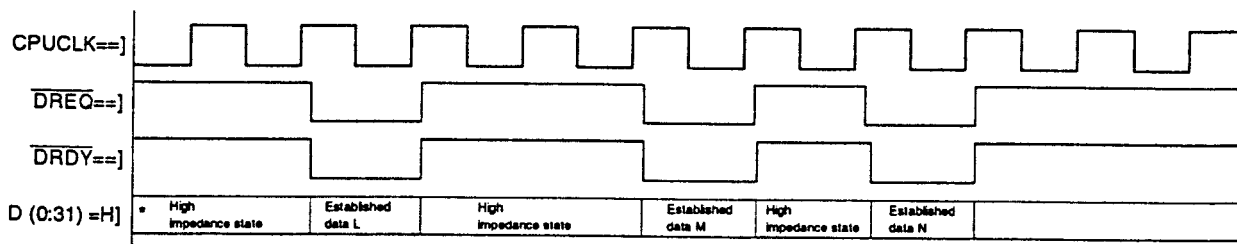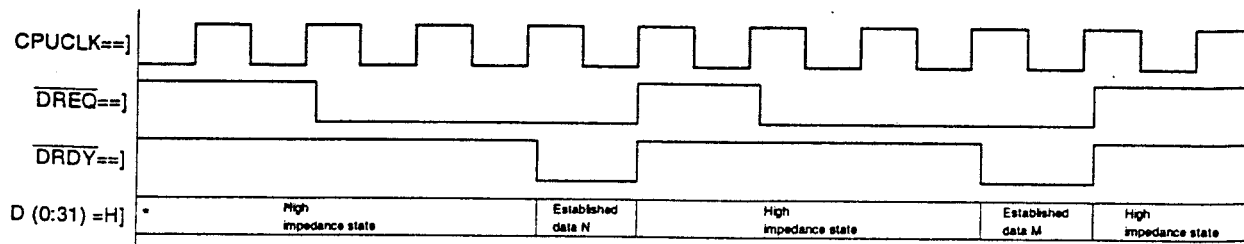In the burst mode, when an address is created at the first cycle immediately after the burst started, the address bus is set free until a next burst. Therefore, the address is created and sent to the ROM while the address bus is free. This circuit consists of three latches and two counters.

The high address is latched with the low address stored in the counter. At this point, the latch and counter outputs become the address of the ROM A. For the ROM B address, the high address is created the same as the ROM A and the low address is the signal that the address of the ROM A is further latched. Whereas, the low address of ROM B is the address delayed one clock from the low address of ROM A. A(2) is used to select ROM A and ROM B. ROM A is selected with A(2)=0 and ROM B is selected with A(2)=1.

LADRLOAD: With an active state of the signal, the low address is loaded to the counter at a low to high transition of SYSCLK.

LADRCNT: With an active state of the signal, the low address is incremented in synchronization with SYSCLK.

BLATCH: With an active state of the signal, the high address is latched at a low to high transition of SYSCLK.
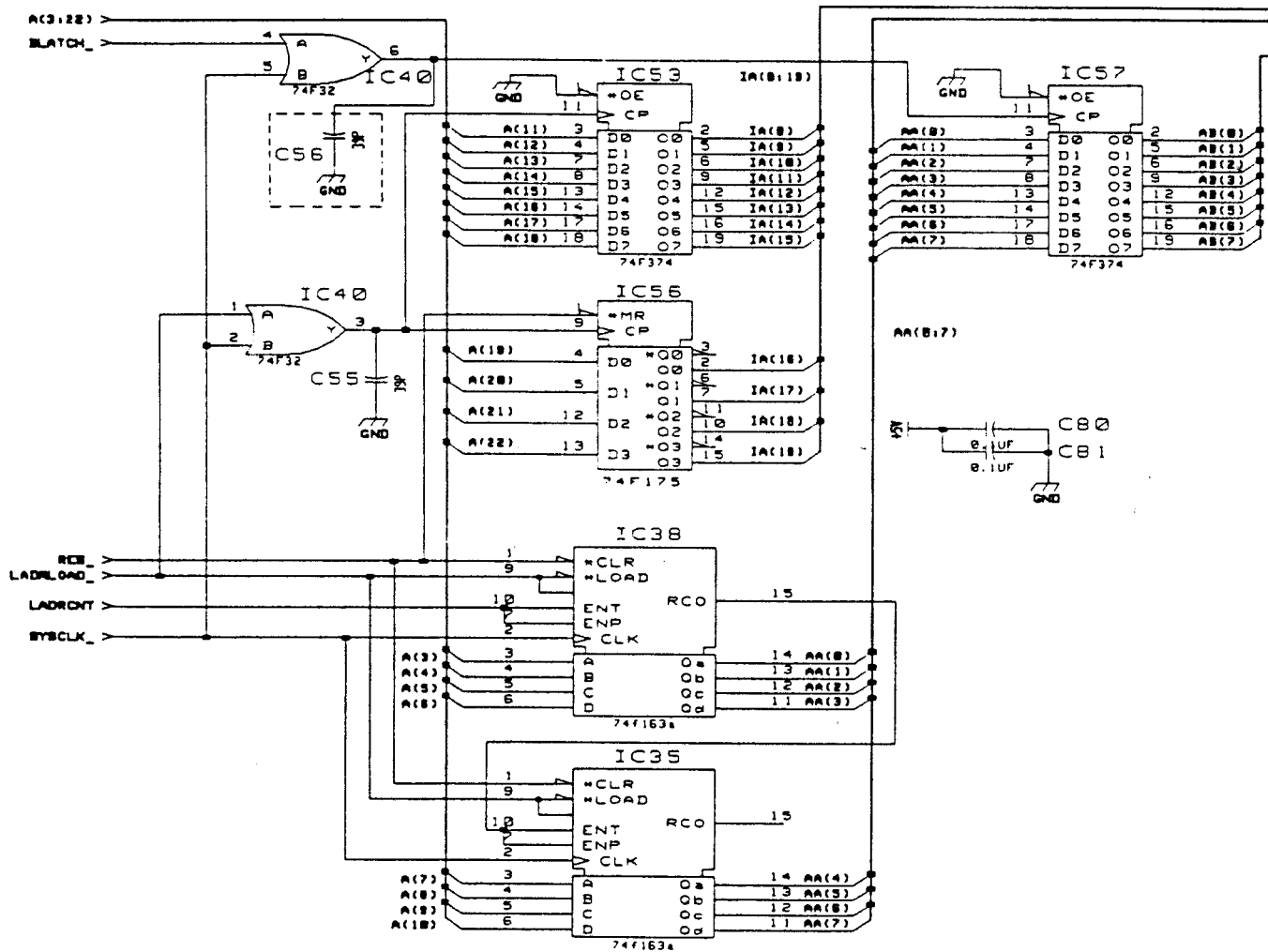
Fig. 13-8
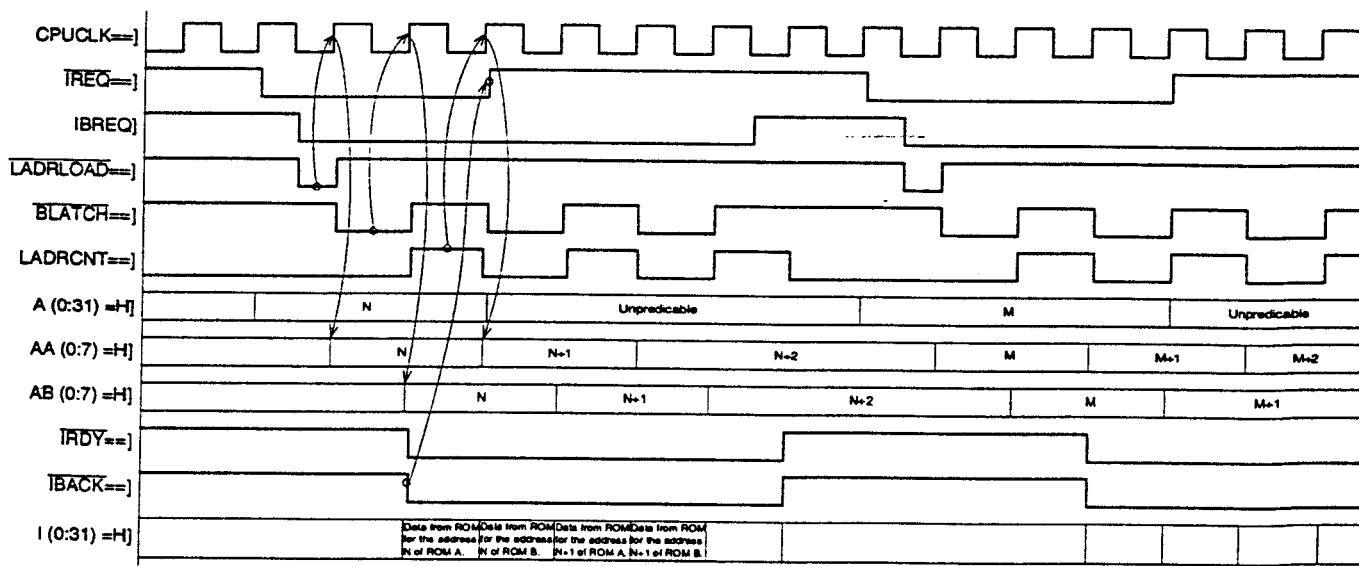
Fig. 13-9

4-3. Swap buffer

Resident font and outline data stored in the ROM that connected with the instruction bus through the data bus. To connect the isolated instruction buffer with the data bus, a swap buffer is needed. A F245 bidirectional buffer is used for this buffer.

4-4. Data buffer

A bidirectional buffer F245 is used to drive the expansion I/O port, font cards, and expansion memory data.

Fig. 13-10

JX-9460PS
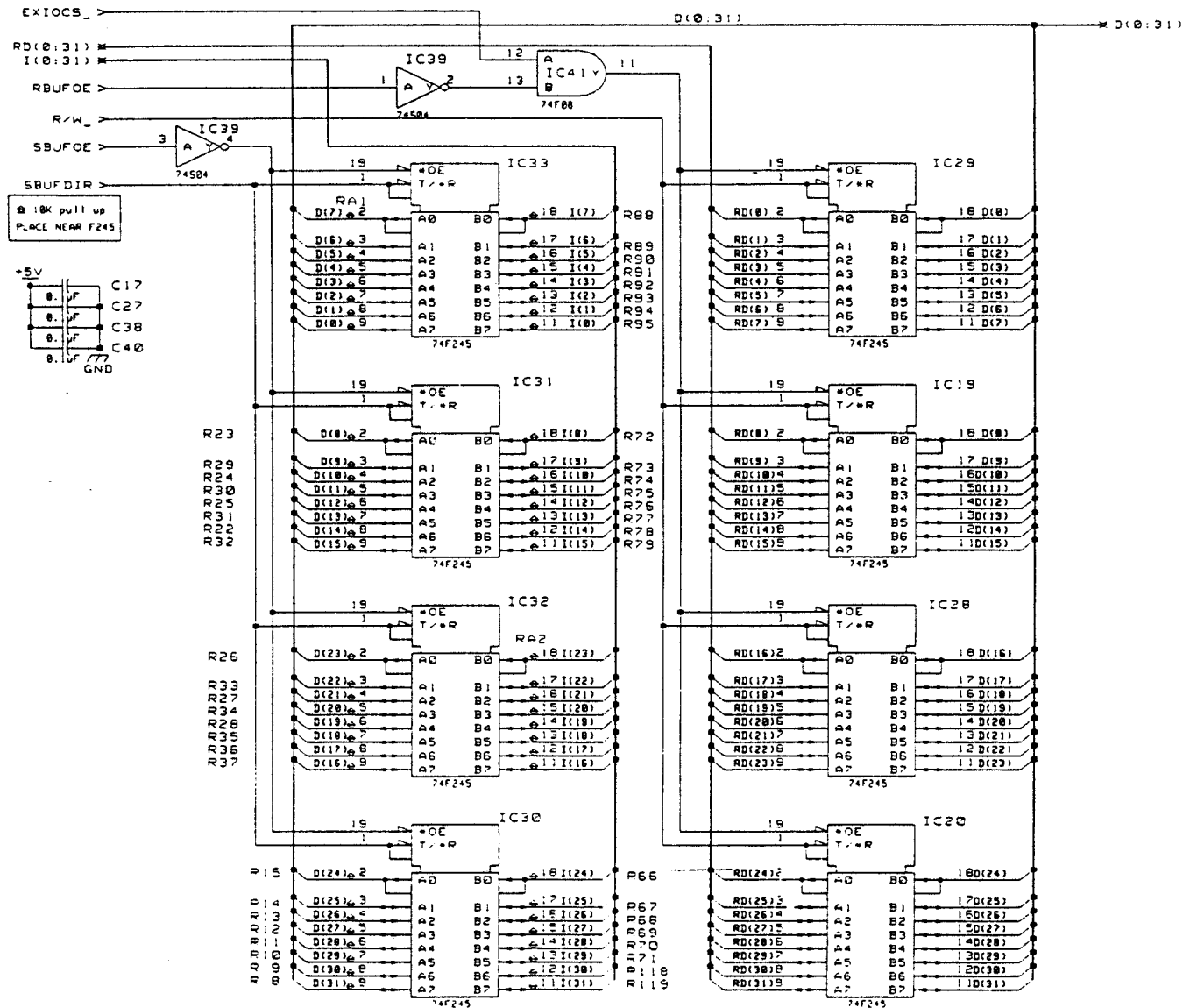
4-5. DRAM address select

This circuit exists to select the DRAM latch address from the column address based on the refresh address from the interface LSI and the data from the CPU.
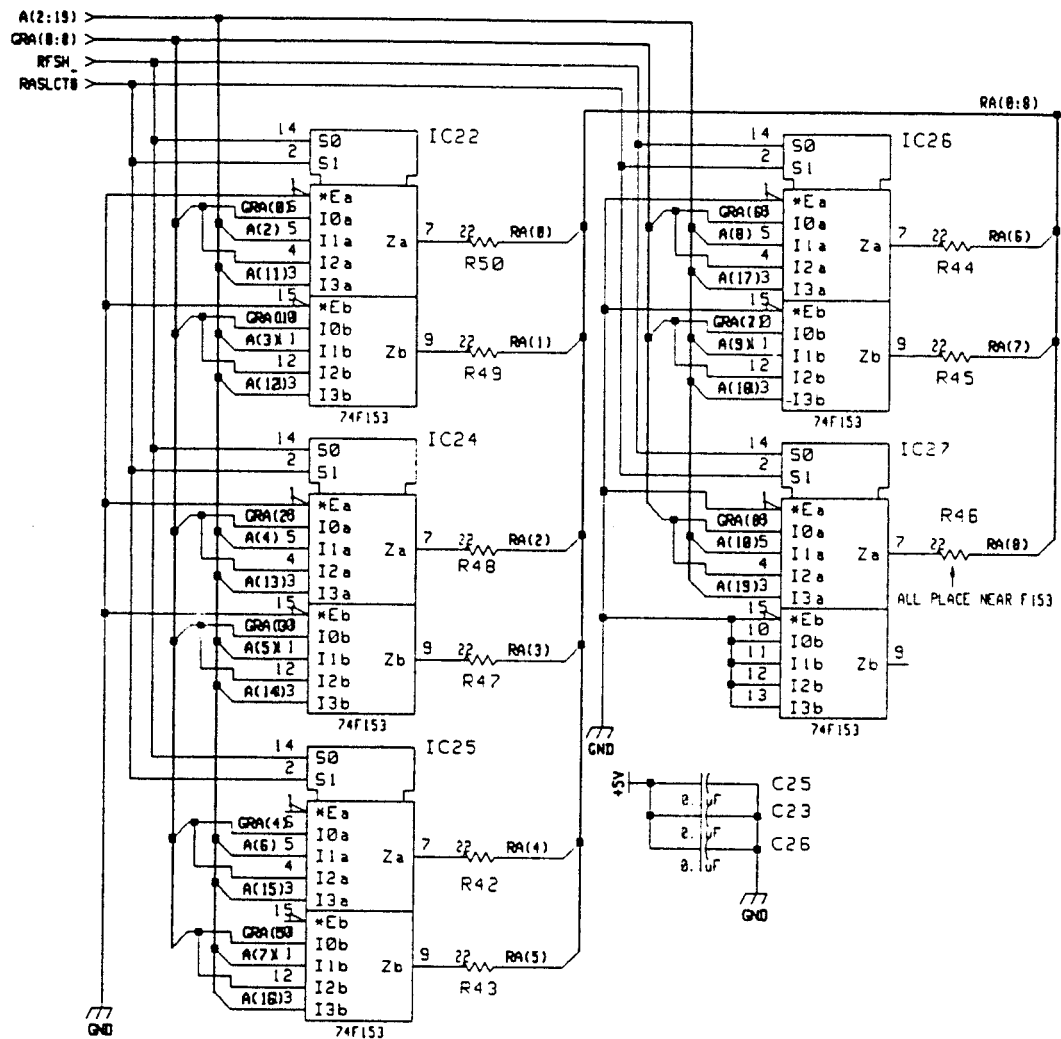
Fig. 13-11

4-6. Clock driver

The interface LSI needs the source frequency for the 28MHz oscillator and CPUCLK that the source frequency is divided into two. The CPU has a 90pF capacitor that defined to have 5ns rise and fall times. To meet this requirement, three driver outputs are used.

Fig. 13-12

- 83 -

4-7. FIFO and peripheral circuit
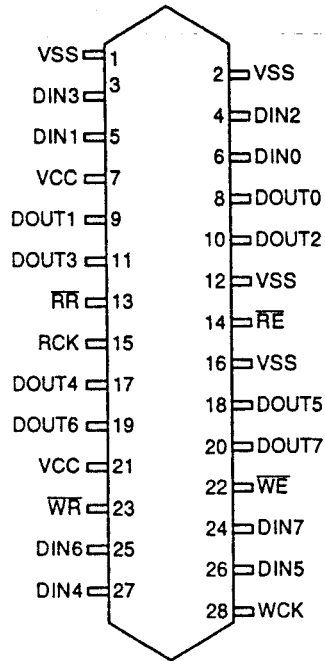
28 PIN ZIP
MSM514212ZS
Fig. 13-13

Pin name	Pin description
DO0~DO7	Data output terminal that access starts to control at a low to high transition of RCK.
DI0~DI7	Data input terminal that the setup time and the hold time start to control at a low to high transition of WCK.
RCK	Read clock input that output is done in synchronization with a low to high transition of PCK when $\overline{RE}$ is at a low. The read address pointer increments at the same time.
$\overline{RE}$	Output action control input. The output is disabled when the signal is at a high. The read address pointer stops at the same moment. Output is enabled when the signal is at a low level.
$\overline{RR}$	Input to reset the read address pointer. The reset signal is accepted at a low to high transition of the RCK input immediately after reset received, and the setup time and the hold time are controlled. When the maximum is reached for the delay steps
WCK	Write clock input that the input action is done in synchronization with WCK when $\overline{WE}$ is at a low. The write address pointer increments at the same time.
$\overline{WE}$	Input control input. A high on this line disables the input action and the write address point also stops. Input is enabled when the signal is at a low level.
$\overline{WR}$	Input to reset the write address pointer. The reset signal is accepted at a low to high transition of the WCK input immediately after reset received
VCC	Power supply pin (+5V).
GND	Ground

The MSM514212 is a high speed FIFO memory that uses 5K x 8-bit DRAM cell that does read and write independent and asynchronous modes.
To write, the write cycle is executed in synchronization with WCK when $\overline{WE}$ input is enabled. The data is written at a low to high transition after the cycle.
To read, the read cycle is executed in synchronization with RCK when $\overline{RE}$ input is enabled. The data is read within the access time of 34ns at a low to high transition of the cycle.

• Write cycle
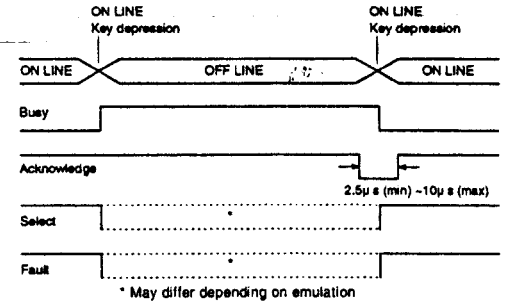
* May differ depending on emulation
Fig. 13-14

• Read cycle
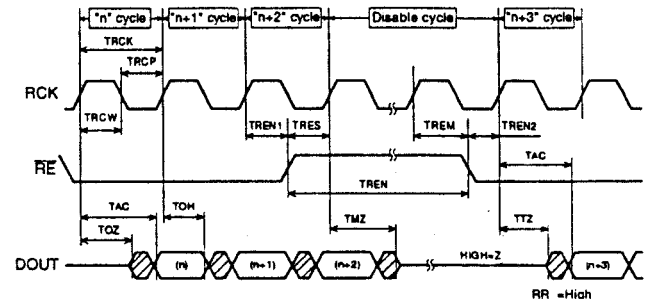
Fig. 13-15

For no wait time is required to access the FIFO by the CPU, the data is lost when received after the FIFO write cycle. A latch is needed to retain the data in order to write FIFO. F273 is used for this latch.
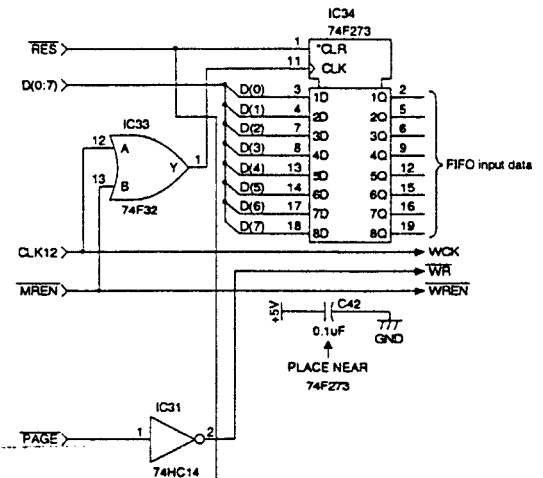
Fig. 13-16

The data read from FIFO is loaded in the shift register and sent to the CPU in serial data transfer mode in synchronization with VIDEO CLK from PCU. LS166 is used for the shift register.
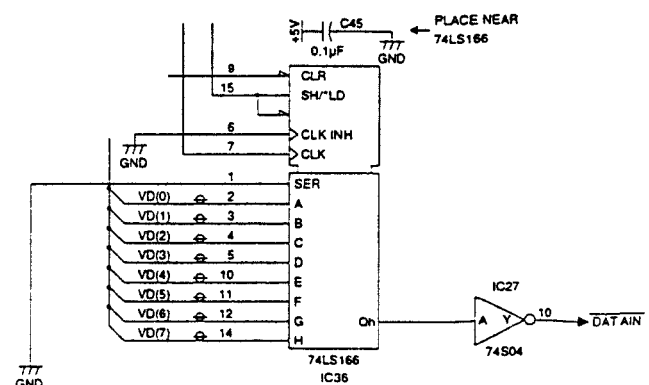
Fig. 13-17

4-8. Interface LSI

This LSI is a CMOS process gate array comprising about 8000 gates.
Its internal logic is discussed below with the internal block diagram.

Block diagram of the interface LSI

INTERFACE LSI

Fig. 13-18

4-8-1. CPU peripherals

4-8-1-1. Interrupts

Interrupt priority is shown next.

CPU signal	LSI signal
WARN	WARN Watchdog timer (NMI)
TRAP0	EXWREQ (from expansion I/O)
TRAP1	Not used
INTR0	EXINTR (from expansion I/O) SERINTR
INTR1	SYNCINTR
INTR2	CENTINTR
INTR3	VINTR INPINTR

High ↕ Low

WARN: This signal goes active if the CPU continues to access data for 13s and retains its state until reset. An active state of the signal shows that the CPU is at fault.

EXWREQ: DMA request signal for 85C30 resides on the Apple-Talk interface board. A high speed processing is enabled with AppleTalk when this signal is connected with an interrupt that has higher interrupt priority.

EXINTR: An interrupt signal from the expansion I/O port.

SERINTR: An RS232C interrupt signal that caused when data is received or transmit is enabled.

SYNCINTR: A high state of HSYNC causes it active in synchronization with the clock and retains its state until the clear signal (SINTRCLR) is received from the port.

CENTINTR: The interrupt signal turns active at a high to low transition of STB and cleared when the Centronics data has been read.

VINTR: Goes active when data receievd from the video interface and retains until the data has been read.

INPINTR: When INPUTPRIME of the Centronics interface turns active, this signal turns active in synchronization with the clock and retains its state until the clear signal (INPCLR) is received from the port.

4-8-1-2. Address decoder

As AM29005 has the address space of 4GB, 2GB in 0H~7FFFFFFFH are assigned to ROM and another 2GB in 80000000H~FFFFFFFFH are assgined to data. Instruction bus and data bus could access ROM and data areas. For final assignment, it will be decoded within the LSI according to the memory map.

4-8-2. ROM access

Because the ROM has 120ns access time, it cannot be processed within the 75ns of CPU's one instruction cycle. But, using two ROMs will allow the processing within the CPU's one instruction cycle.

When burst is requested by IREQ and IBREQ, the CPU issues the latch signal LADRLOAD in synchronization with the clock to read the address. This is because the address cannot be issued by the CPU when it goes into the burst mode. This latched address is sent to ROM A. A BLACK- signal is issused in one clock after LADRLOAD. With this, the low address of the address received from ROM A is latched. The high address has been latched by LADRLOAD. The address after the latch is sent to ROM B. In one clock after BLATCH is issued IOE1 and the data sent from ROM A. At the same time with IOE1, IRDY turns active and the data is received by the CPU at a low to high transition of the clock. There is 150ns until the data is received, there is a sufficient time for accessing.

The signal LADRCNT is generated at the same time as IOE1 and the address increments at a next clock. One clock after IOE1, IOE2 is created which is connected to ROM B. Since the address of ROM B has been latched by BLATCH, there is 150ns until the IOE2_ generated data is received by the CPU. The CPU therefore could recieve the data at every clock that allows the CPU to access without the access time.

The same action takes place after the address has incremented. Increment continues util a next latch signal LADRLOAD is received.

After the burst request is issued until the first data is read, the CPU needs to wait for the latch action. Two waits needed when it starts from ROM A or three waits when it starts from ROM B. Selection of ROM A and ROM B depends on A(2).

The signal IBACK is issued at the same moment IOE1 (IOE2) with which the first data is received. When it returned to the CPU, the CPU stops generating the address. At this point, IREQ turns active.

Fig. 13-19

4-8-3. DRAM controller

The figure below shows signal timings.

Fig. 13-20

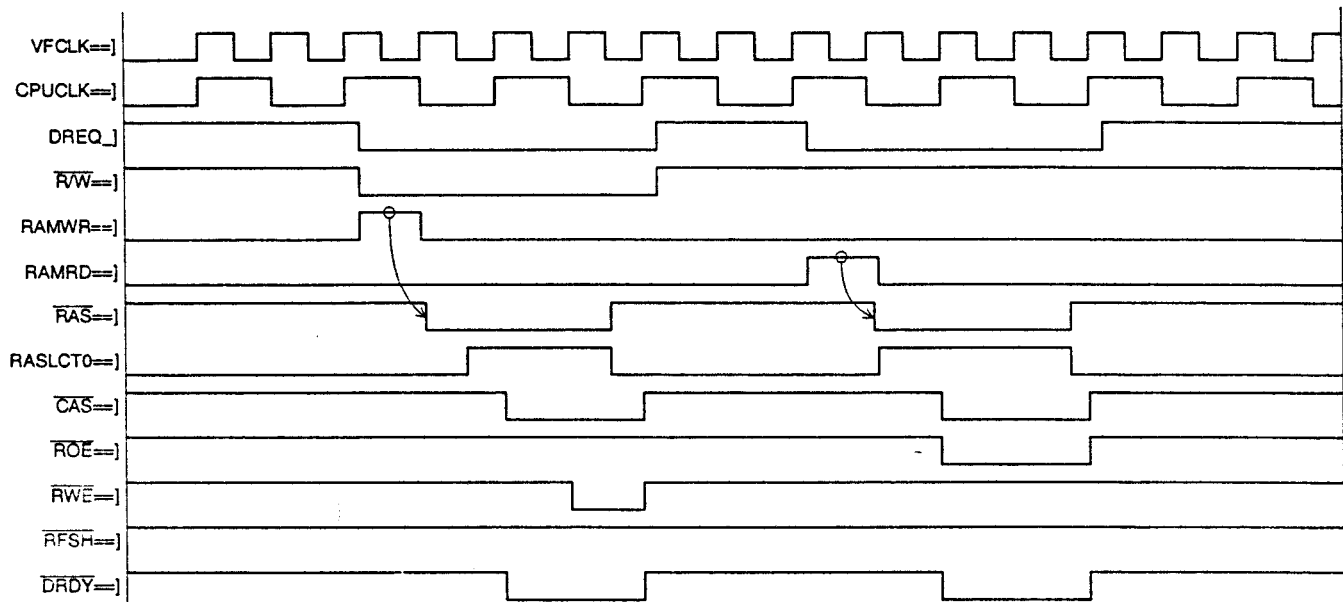$\overline{CAS0}$-$\overline{CAS3}$ are allocated to each byte of data bus. Which is active is controlled by DREQT1, OPT0-OPT2, A0, A1, and R/W.

R/W	DREQT1	OPT0	OPT1	OPT2	A0	A1	CAS0	CAS1	CAS2	CAS3
0	0	0	0	0	×	×	0	0	0	0
0	0	0	1	0	×	0	0	0	1	1
0	0	0	1	0	×	1	1	1	0	0
0	0	1	0	0	0	0	0	1	1	1
0	0	1	0	0	1	0	1	0	1	1
0	0	1	0	0	0	1	1	1	0	1
0	0	1	0	0	1	1	1	1	1	0
1	×	×	×	×	×	×	0	0	0	0

Table 3

For control of refresh, a refresh request signal is generated in a cycle of 13us that goes into action with higher priority than data. However, if requested in a middle of an access cycle, it waits until the cycle has been completed. RAS only refresh is done in the refresh cycle. Its timing is shown in the figure below. The refresh address is incremented upon completion of the refresh cycle.
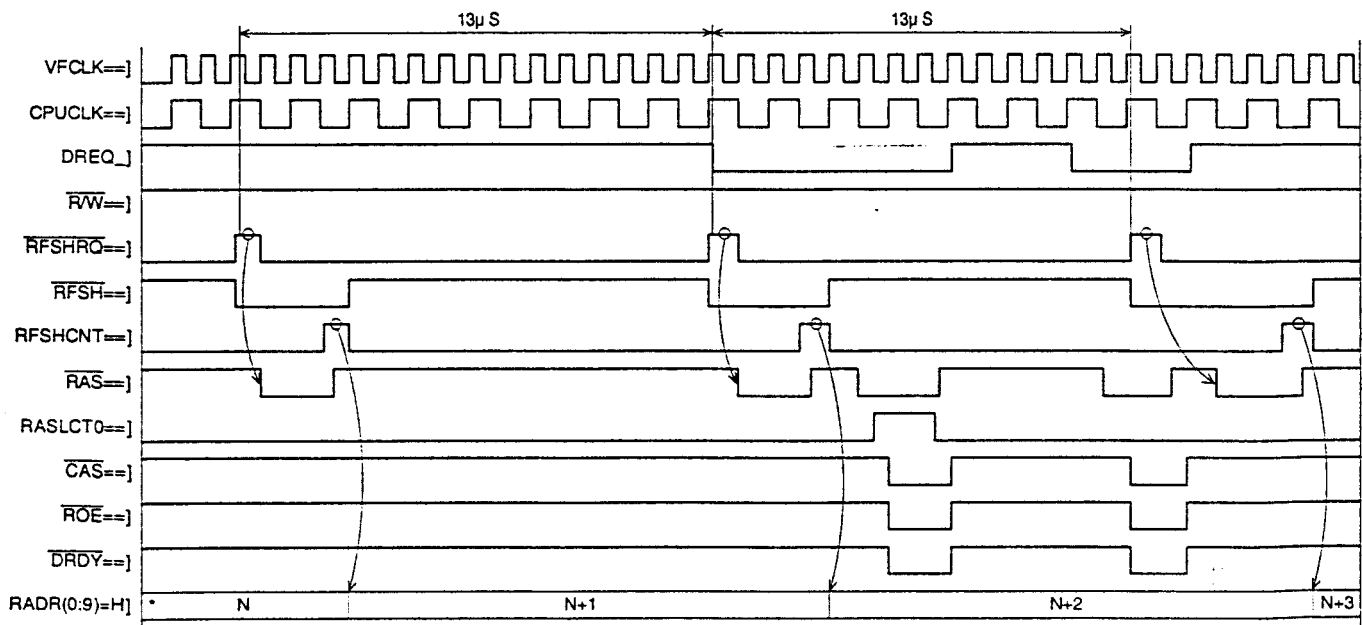

Fig. 13-21

4-8-4. Automatic expansion memory allocation

There are three kinds of expansion memories of 1MB, 2MB, and 4MB that allows to expand the memory up to 8MB using two slots. Memory allocation for those two slots will be done automatically by the LSI. For two slots are connected in series, a line memory would be available without care in terms of software.

To achieve this, the memory capacity on slot 1 is scanned and its value is written in the port. The LSI compared the port output with address and controls the expansion memory gate signals G1~G3, $\overline{\text{EXRAS1}}$, and $\overline{\text{EXRAS2}}$.

4-8-5. FIFO control

Read and write to FIFO is done asynchronous. There is a rule to do it within 10ms after write to read in the case of the asynchronous mode. Because 10ms equals four lines, the CPU controls that the write is done after $\overline{\text{SYNCINTR}}$ is received and read should start after four lines.

To write, it can be achieved without a wait in synchronization with the CPU after sending data to the FIFO port. The signal $\overline{\text{PAGE}}$ is used to reset write that is done when $\overline{\text{PAGE}}$ is inactive. It would not be reset if $\overline{\text{PAGE}}$ is active.

To read, VIDEO CLK is counted and $\overline{\text{RDEN}}$ is issued at every eight clocks. With a single clock delay from $\overline{\text{RDEN}}$, $\overline{\text{LD}}$ is issued to write data in the shift register. The read will be cancelled in four lines after $\overline{\text{PAGE}}$ has turned active.

4-8-6. Centronics interface

The latch circuit is controlled by the LSI to take care of the Cenronics interface. All input signals are received by the Schmitt trigger circuit, and the output has the capacity to drive 4mA.

4-8-6-1. Signal description

(a) $\overline{\text{STB}}$ (input, low active)
Sync signal used to read data.

(b) DATA1 to DATA8 (input)
Represents information from the first to eight bits.

(c) $\overline{\text{ACK}}$ (input, active low)
Acknowledge to $\overline{\text{STB}}$ input which is received when data input is terminated.
This signal is also issued when BUSY turns from high to low during initialization.

(d) BUSY (active high, output)
Indicates that data input is not enabled.
This signal is issued in one of the following:

(i)   During processing of the receive data

(ii) During initialization

(iii) During alarm

(iv) When the buffer is full.

(e) PE (output, active high)
This signal is issued when a paper empty exists.

(f) SELECT (output, active high)
High when in the on-line mode and low in the off-line mode.
On-line mode is established in one of the following.

(i)   Upon completion of initialization

(ii) When the ONLINE switch is pressed in the off-line mode.

NOTE: On-line mode would not be established in the alarm mode for the above (i) and (ii).

On-line mode is established in one of the following.

(i)   When the ONLINE switch pressed in the off-line mode.

(ii) When in the alarm.

(g) $\overline{\text{INPUTPRIM}}$ (input, active low)
It goes into the initialization mode when this signal is received.

(h) $\overline{\text{FAULT}}$ (output, active low)
This signal is issued when in the alarm mode.
It goes into the off-line mode when this signal is issued.

4-8-6-2. Data receiving flow

Explanation of the Centronics interface data receive flow

① The host sets up DATA8 to DATA1 and asserts $\overline{\text{STB}}$.

② At a leading edge of $\overline{\text{STB}}$, BUSY is returned to the host.

③ At a trailing edge of $\overline{\text{STB}}$, the interrupt signal $\overline{\text{CEINT}}$ is asserted to inform the CPU that there was a data reception.

④ At a trailing edge of $\overline{\text{STB}}$, data is latched in the data receive latch.

⑤ Awaits with $\overline{\text{CEINT}}$ until the CPU recognizes it.

⑥ As the CPU recognizes the interrupt, $\overline{\text{CEINT}}$ is negated and the data is read in the receive latch.

⑦ At the moment it became enabled to receive the next data, $\overline{\text{ACK}}$ is asserted to request the next data.

⑧ After negating $\overline{\text{ACK}}$, BUSY is negated and a single byte receive sequence terminates.
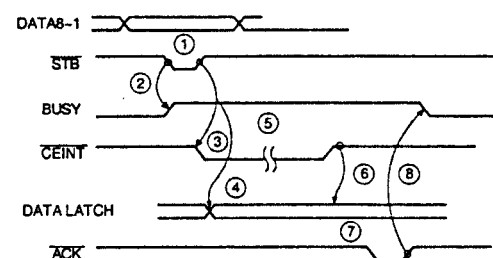
Fig.13-22. Receiving flow

4-8-6-3. Centronics interface timings

The Centronics interface timings can be selected with the operation panel.

TIMING 1 (DATA TRANSFER STANDARD TIMING)
(Centronics MODEL 703)

T1 : 0.5μ s (min)   T4 : 2.5μ s (min) ~ 10μ s (max)
T2 : 0.5μ s (min)   T5 : 0.5μ s (max)
T3 : 0.5μ s (min)   T6 : 2.5μ s (Typ)
                         T : Program loop time
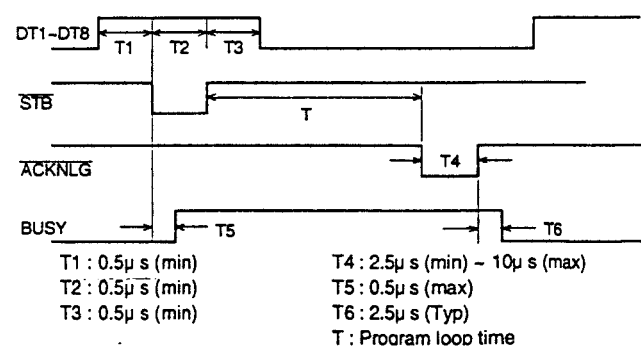
Fig. 13-23

Power On Standard Parallel Interface Timing

T1 : 2.5μ s (min) ~ 10μ s   T3 : 0.0μ s (min)
T2 : 0.5μ s (max)   T : Initializing time
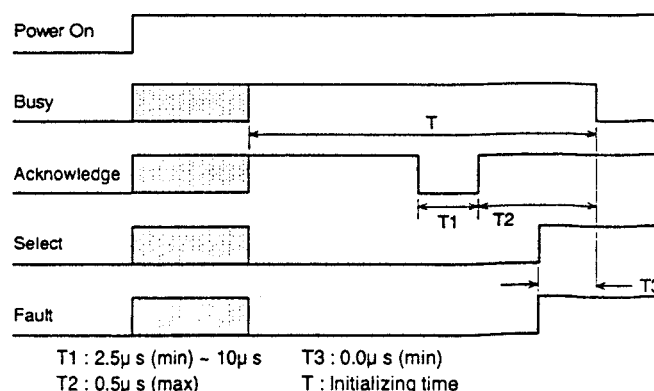
Fig. 13-24

Input Prime Timing Standard Parallel Interface Timing

Input Prime

T2'

Busy   T2

Acknowledge ———————————————————— HIGH
.... LOW

Select
....

Fault
....

T2 = 0.4u sec (MAX). T2' = 0.4u s (MAX)

Fig. 13-25

ON LINE/OFF LINE Selection Standard Parallel Interface Timing

ON LINE
Key depression

ON LINE
Key depression

ON LINE   OFF LINE   ON LINE

Busy

Acknowledge
2.5µ s (min) ~ 10µ s (max)

Select

Fault

* May differ depending on emulation
Fig. 13-26

TIMING 2 (DATA TRANSFER ALTERNATE TIMING)

DT1~DT8
T1 T2 T3

STB   T

ACKNLG   T4
T6

BUSY   T5

T1 : 0.5µ s (min)
T2 : 0.5µ s (min)
T3 : 0.5µ s (min)

T4 : 2.5µ s (min) ~ 10µ s (max)
T5 : 0.5µ s (max)
T6 : 2.5µ s (Typ)
T : Program loop time

Fig. 13-27

Power On Alternate Parallel Interface Timing

Power On

Busy   T

Acknowledge   T1
T2

Select   T3

Fault

T1 : 2.5µ s (min) ~ 10µ s   T3 : 0.0µ s (min)
T2 : 2.5µ s (Typ)   T : Initializing time
Fig. 13-28

Input Prime Timing Alternate Parallel Interface Timing

Input Prime

T2'

Busy   T2

Acknowledge ———————————————————— HIGH
.... LOW

Select

Fault

T2 = 0.4u sec (MAX). T2' = 0.4u s (MAX)

Fig. 13-29

ON LINE/OFF LINE Selection Alternate Parallel Interface Timing

ON LINE
Key depression

ON LINE
Key depression

ON LINE   OFF LINE   ON LINE

Busy

Acknowledge
2.5µ s (min) ~ 10µ s

Select

Fault

* May differ depending on emulation
Fig.13-30. Centronics interface timing

TIMING 3 (DATA TRANSFER ALTERNATE TIMING)

DT1~DT8
T1 T2 T3

STB   T

ACKNLG   T4
T6

BUSY   T5   T7

T1 : 0.5µ s (min)
T2 : 0.5µ s (min)
T3 : 0.5µ s (min)
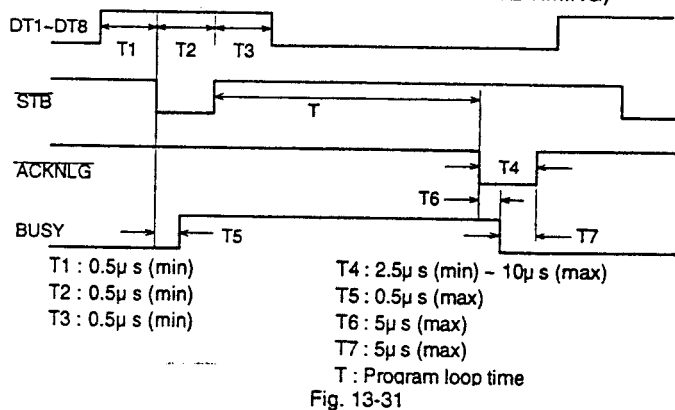
T4 : 2.5µ s (min) ~ 10µ s (max)
T5 : 0.5µ s (max)
T6 : 5µ s (max)
T7 : 5µ s (max)
T : Program loop time
Fig. 13-31

Power On Alternate Parallel Interface Timing
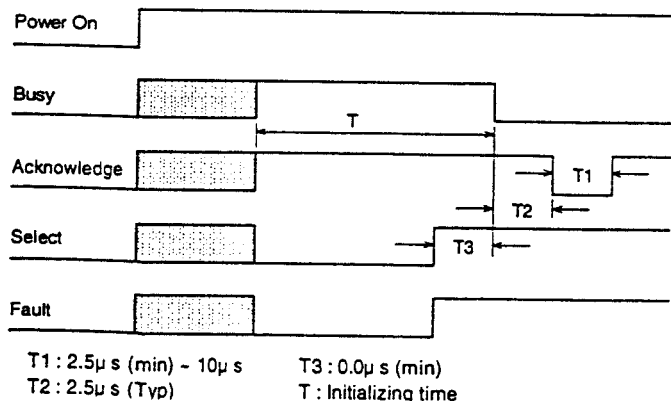
Power On

Busy   T

Acknowledge   T1
T2

Select   T3

Fault

T1 : 2.5µ s (min)   T3 : 0.0µ s (min)
T2 : 5.0µ s (max)   T : Initializing time

Fig. 13-32

Input Prime Timing Alternate Parallel Interface Timing

T2 = 0.4u sec (MAX). T2' = 0.4u s (MAX)

Fig. 13-33

ONLINE/OFFLINE Selection Alternate Paralle Interface Timing

2.5μ s (min) ~10μ s (max)
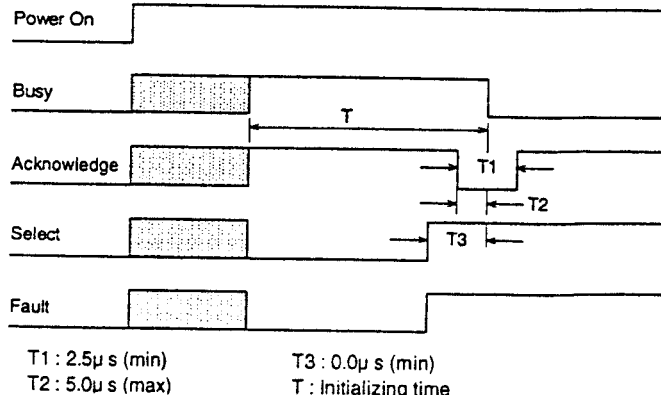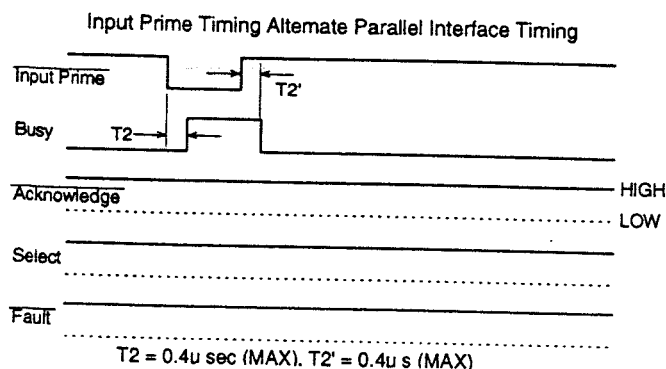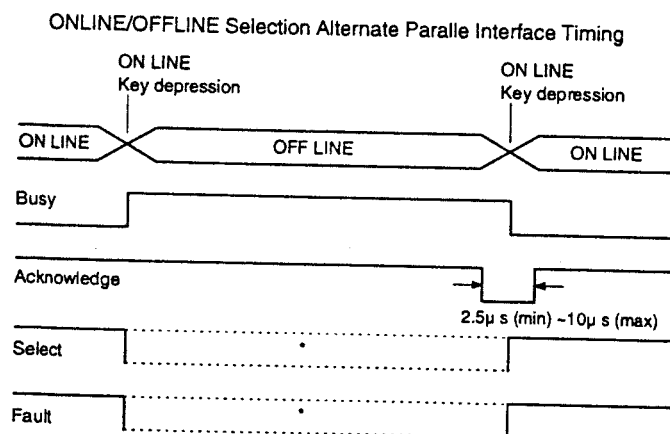
* May differ depending on emulation

Fig. 13-34

4-8-6-5. Interfacing signals

The Centronics Parallel interface consists of a 36 pin connector. The signals on the 36 pin interface connector are:

Pin	Signal Name	Pin	Signal Name
1	STB	19	STB Ret
2	DATA 1	20	DATA 1 Ret
3	DATA 2	21	DATA 2 Ret
4	DATA 3	22	DATA 3 Ret
5	DATA 4	23	DATA 4 Ret
6	DATA 5	24	DATA 5 Ret
7	DATA 6	25	DATA 6 Ret
8	DATA 7	26	DATA 7 Ret
9	DATA 8	27	DATA 8 Ret
10	ACKNLG	28	ACKNLG Ret
11	BUSY	29	BUSY Ret
12	PE (Paper End)	30	PE Ret
13	SLCT	31	INPRM
14	AUTO LF	32	FAULT
15	NC	33	GND
16	GND (0V)	34	NC
17	Frame Ground	35	+5V
18	+5V	36	SLCT IN

4-8-7 Video interface

The SIO is used to control the CPU internal. To access the SIO, the CPU needs to have two waits.

4-8-8. RS232C interface

The SIO implemented within the LSI issues TXD, DTR, and RTS and received RXD and DSR. To access this SIO, the CPU needs to have two waits.

4-8-9. General purpose port

Input and output shown in the port chart are created inside the LSI. This port is accessed without wait.

4-8-10. Jitter, left margin circuit

The jitter and the left margin circuit are provided in the controller side to send video clock from the controller side to the engine. The interface LSI is used to perform this operation.

The jitter circuit forms VIDEO CLK from 30.404MHz which is four times greater than 7.6MHz of video clock (600DPI), and sends it out. The left margin circuit can be adjusted with the counter value setting from the CPU. The adjustment unit is 4 dots.

4-9. EEPROM

This chip is a 4K-bit (256 x 8) CMOS process electrically erasable programmable ROM that interfaced two control signals of SCLK and SDATA. Input and output signals are connected with the LSI.
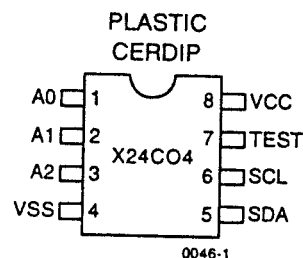

PLASTIC
CERDIP

Fig. 13-35

Read & Write Cycle Limits

| Symbol	Parameter	Min	Max.	Units
f_{SCL}	SCL Clock Frequency	0	100	KHz
T_1	Noise Suppression Time Constant a:SCL SDA Inputs		100	ms
t_{AA}	SCL Low to SDA Data Out Valid	0.3	3.5	μs
t_{BUF}	Time the Bus Must Be Free Before a New Transmission Can Start	4.7		μs
$t_{HD:STA}$	Start Condition Hold Time	4.0		μs
t_{LOW}	Clock Low Period	4.7		μs
t_{HIGH}	Clock High Period	4.0		μs
$t_{SU:STA}$	Start Condition Setup Time (for a Repeated Start Condition)	4.7		μs
$t_{HD:DAT}$	Data in Hold Time	0		μs
$t_{SU:DAT}$	Data in Setup Time	250		ns
t_R	SDA and SCL Rise Time		1	μs
t_F	SDA and SCL FALL Time		300	ns
$t_{SU:STO}$	Stop Condition Setup Time	4.7		μs
t_{DH}	Data Out Hold Time	300		ns

Bus Timing
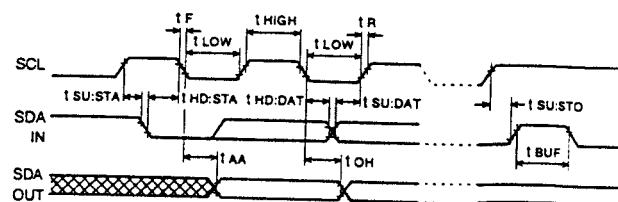
Fig. 13-36-A

Write cycle timing
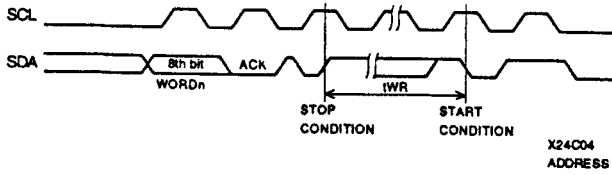
Fig. 13-36-B

4-10. Option device interrogation

Installation of option device is done by scanning the port described in the port chart to interrogate the use of option device. The circuit consists of the LS153.
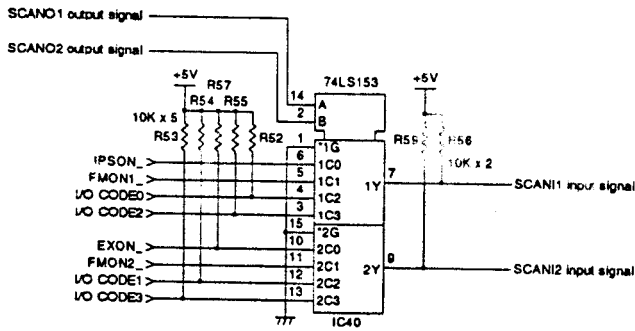
Fig. 13-37

4-11. HRT circuit

The HRT controls 300DPI data in digital to output in 600DPI engine and to enhance image data of 300DPI. This is composed of the gate array of approx. 3000 gates and FIFO of 8 lines.

<Outline and function of the HET>

This circuit divides a target pixel into 2 x 2 dot pattern according to the peripheral pixel pattern of the target pixel and print it, converting 300 dpi into 600 dpi.

Fig. 13-38A

As shown in Fig. 13-38B, this circuit is connected between the PCU and the ICU to convert 300 dpi data from the ICU into 600 dpi data and send them to the PCU.

Fig. 13-38B

HRT BLOCK DIAGRAM

Fig. 13-38C

Gate array pin assignments

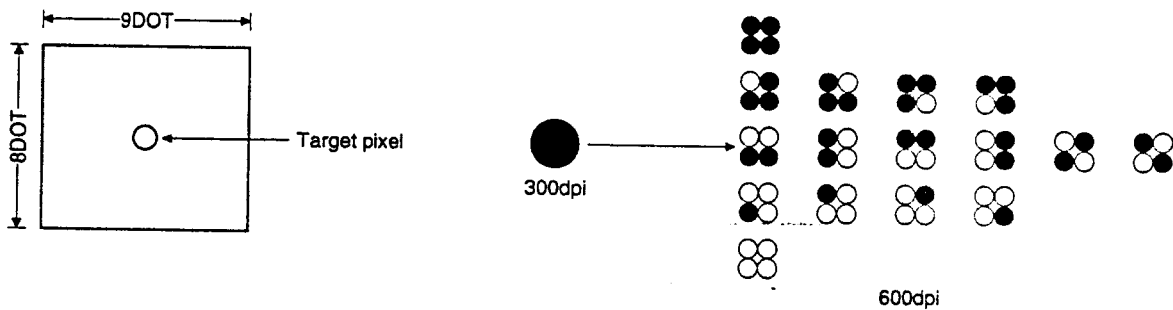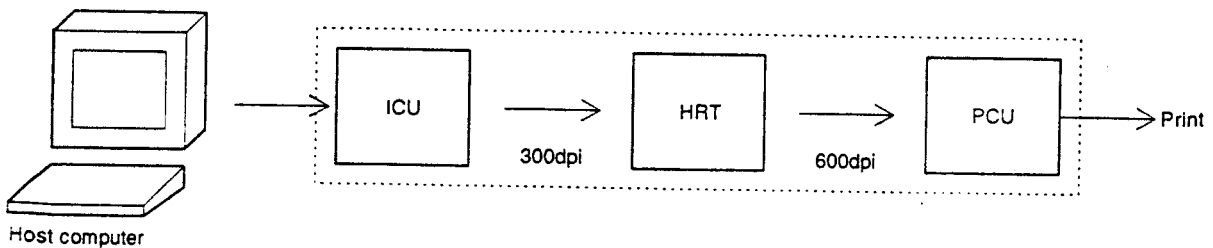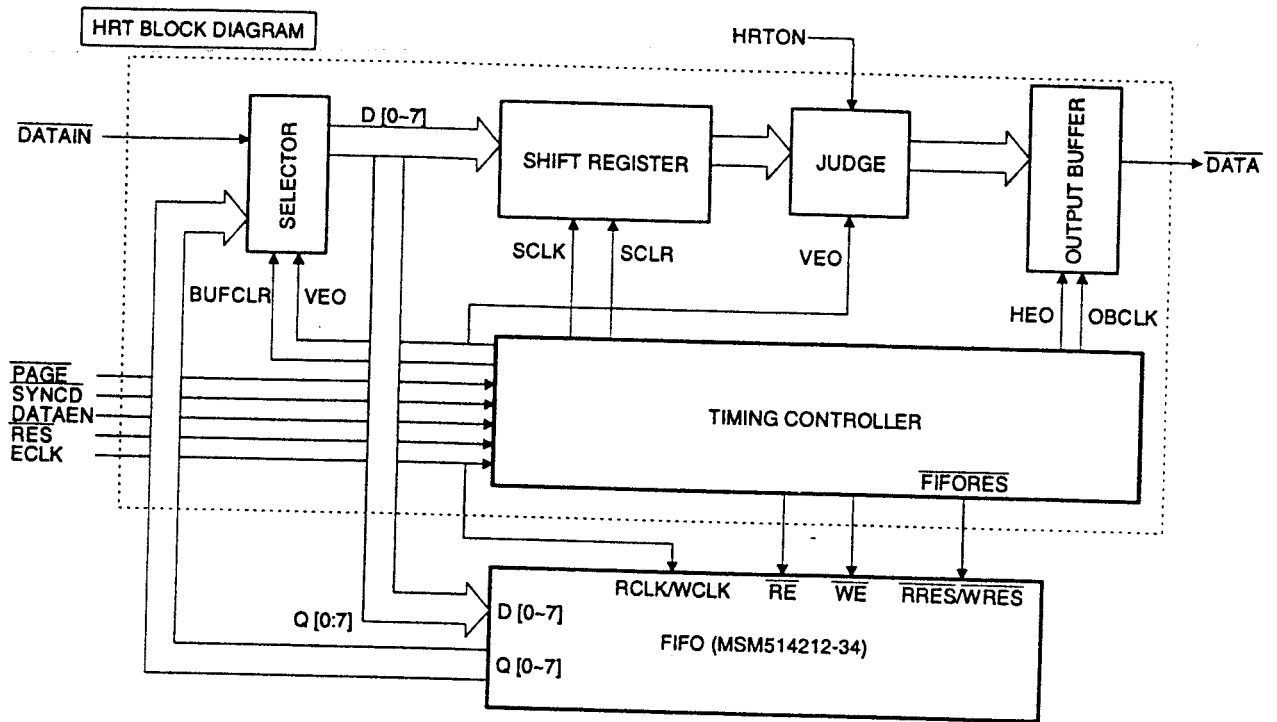| PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	O	RE	23	—	NC
2	I	DATAIN	24	I	SYNCD
3	—	GND	25	—	GND
4	I	Q4	26	I	ECLK
5	I	Q5	27	—	VDD
6	—	GND	28	—	GND
7	—	VDD	29	O	DATA
8	I	Q6	30	—	GND
9	I	Q7	31	—	VDD
10	O	WE	32	I	PAGE
11	O	FIFORES	33	I	RES
12	O	D7	34	O	D3
13	O	D6	35	O	D2
14	—	GND	36	—	GND
15	O	D5	37	O	D1
16	O	D4	38	O	D0
17	—	GND	39	—	VDD
18	—	VDD	40	I	Q0
19	I	DATAEN	41	I	Q1
20	I	HRTON	42	—	GND
21	I	TEST2	43	I	Q2
22	I	TEST1	44	I	Q3

- **PAGE** : Input
  Page initializing signal from the controller.

- **SYNCD** : Input
  Horizontal synchronous signal (synchronized with CLK6)

- **DATAEN** : Input
  Effective area signal from the controller (synchronized with CLK6)

- **ECLK** : Input
  Reference clock from the controller

- **DATAIN** : Input
  Input data of 300 dpi sent from the controller. They are sent once for two lines. (Described later.)

- **DATA** : Output
  Output data of 600 dpi sent to the printer engine.

- **FIFORES** : Output
  Initializing signal of read/write address pointer of FIFO.

- **RE** : Output
  Read enable signal of FIFO

- **WE** : Output
  Write enable signal of FIFO

- **D0-D7** : Output
  Write data of FIFO

- **Q0-Q7** : Input
  Read data of FIFO

- **HRTON** : Input
  RET ON/OFF signal. ON at HIGH, OFF at LOW.

- **TEST1,TEST2** : Input
  Gate array test signal

Outline of the gate array

In the timing control section, the PAGE signal starts the circuit and the SYNCD and DATAEN start each line.

When each line is started, read and write operations are performed from and to the FIFO and RCLK and WCLK are outputted. RCLK and WCLK are synchronized signals. The FIFO stores data of 8 lines.

The first line: BUFCLR signal is issued. Data read in the selector section from FIFO are ignored. Bits 1 - 7 are "0." Selection is made so that data from DATAIN (300DPI serial data) are outputted to bit 8. When these data are outputted to the next shift register, the FIFO writes data simultaneously.

The second line: The read data from the FIFO are selected to be outputted to the shift register.

The third line: Bit 7 of the read data from the FIFO and DATAIN are selected to be outputted to the shift register. The FIFO write is performed at the same time. After that, even number lines perform read only, and odd number lines perform read/write. This operation is repeated until PAGE becomes HIGH.

Data stored in the shift register are modified in the judgement circuit, converted into 600DPI, and sent to the engine.

The internal circuit is synchronized with ECLK (7.6MHz).

4-12. ROM data select

Data of ROM set A and ROM set B by the two-stage interleave is
selected by the selector to output to the CPU.
In the JX-9600, selection is made with the OE signal. However, selection with the OE signal leads to a greater data delay time, disabling
14MHs operations. The selector, therefore, is used to allow 14MHz
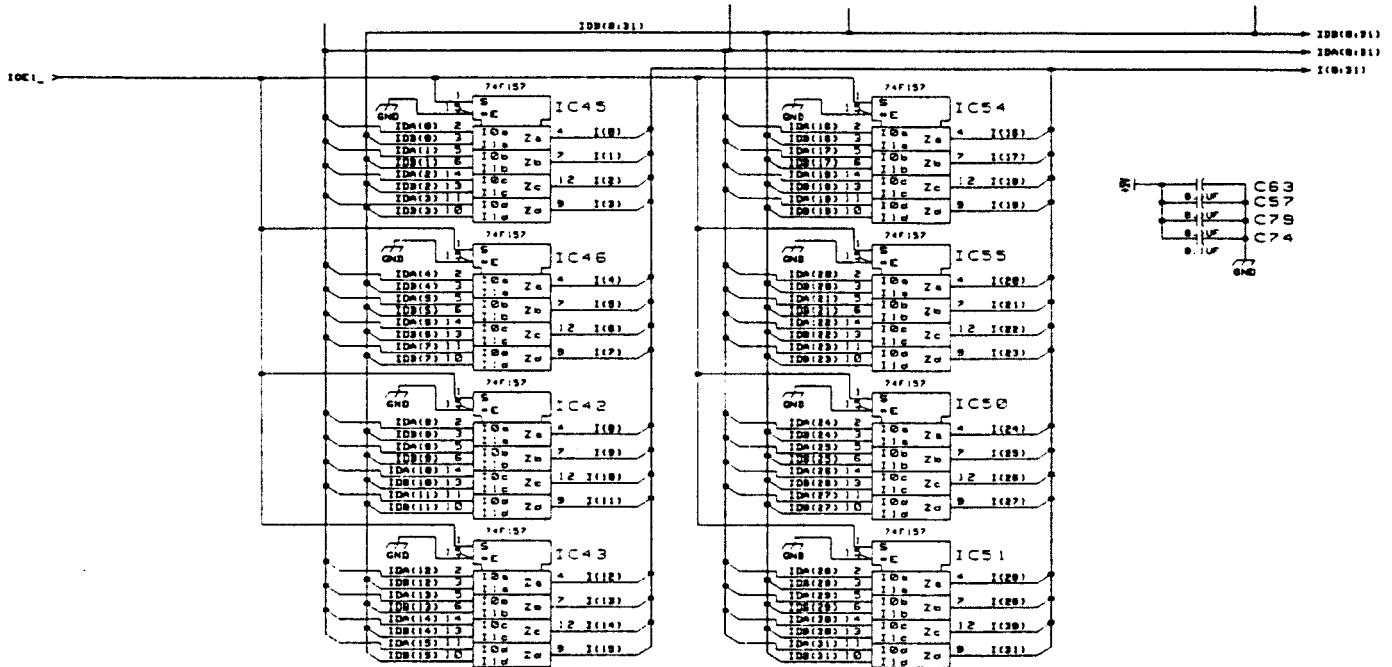operations.

Fig. 13-39

4-13. Video data select

The JX9460 performs 300 DPI when PCL5 is used, and selects between 600 DPI and 300 DPI when PS is used.
Therefore 300 DPI and 600 DPI are selected with the control signal
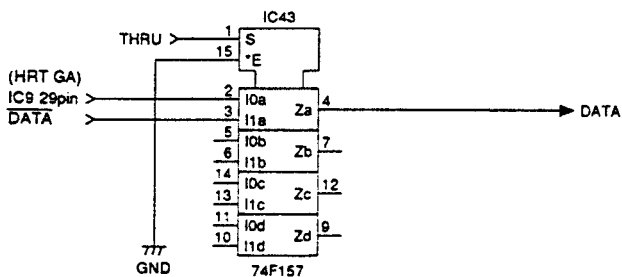THRU supplied from the general-use port.

Fig. 13-40

5. Option devices

5-1. Font card

When the font card is installed, FCON1 is turned low that the CPU recognizes the installation of the font card. When the font card is accessed, CDCS1 turned active and data are sent according to the CG0E signal. The data output is sent onto the data bus through the bidirectional buffer.

Although the font data is in the 16 bits structure, the CPU receives it as 32 bits, ignoring the upper 16 bits. The CPU has a single wait cycle, then.

5-2. Expansion memory

Same as the standard RAM, 16 chips of 4M-bit DRAM are used as a unit of expansion memory. Two chips are required to expand it to 1MB, four chips for 2MB, and eight chips for 4MB. The timing is the same as the standard RAM and control signals are supplied through the buffer.

To select RAM, the signal obtained after decoding G1 and G2, are used to set RAS active or inactive through the EXRAS gate.

5-3. PS board

The circuit of this board is the same as the ROM address select circuit mentioned in 4.2. When the Postscript board has been installed, the signal PSON is forced low to inform the CPU that the Postscript board is installed.

5-4. RS232C board

5-4-1. Specifications

Communication: Start/stop mode ...Asynchronous

Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19,200 bps

Transmission: Full duplex

Synchronization: Start bit 1
Stop bits ... 1
Data bits ... 8
Internal clock synchronization

Error detection: Parity is not used

5-4-2. Interfacing signals

The interface connector signal table and the connector for RS232C interface is shown in Table 8-7.

Table 8.7 RS232C Signal

NO.	SIGNAL
1	FG (Frame Ground)
2	TXD (Transmitted Data)
3	RXD (Received Data)
4	RTS (Request to Send)
6	DSR (Data Set Ready)
7	GND (Signal Ground)
20	DTR (Data Terminal Ready)

Outline View of Interface Connector
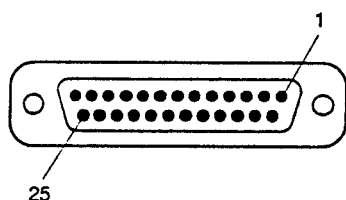
Fig. 13-41 DDK 17LE-1325C-28 (device side)

5-4-3. Description of RS232C interface signals

Transmitted Data (TXD)

Printer output. Data from the printer to the computer.

Received Data (RXD)

Printer input. Data from the computer to the printer.

Request To Send (RTS)

Printer output. This signal is high when there is power on in the printer.

Data Set Ready (DSR)

Printer input. This signal is not required for controller to receive data.

Data Terminal Ready (DTR)

Printer output. High signal indicates that the printer is ready and low signal indicates that the printer is busy.

5-4-4. Signal levels at RS232C interface

Transmit
Signals: TXD, DTR, RTS
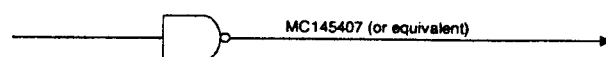
Receive
Signals: RXD, DSR
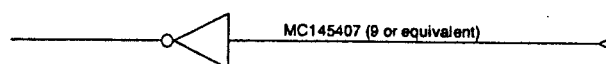
RS232C driven by 5V
Driver, Receiver

Receive signal level: High ...+3 to +15V
Low ... −15 to −3V

Transmit signal level: High ...+3 to +15V
Low ...−15 to −5V

Transmit data: TXD
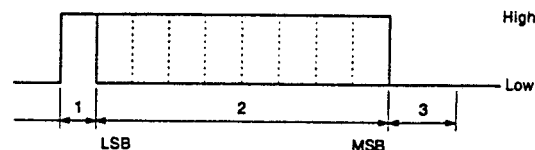
Receive data: RXD
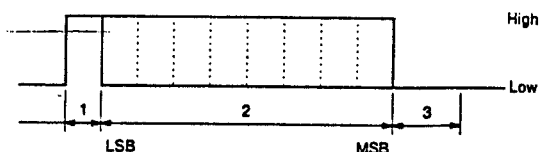
1. Start bit
2. 1-byte data
3. Stop bit(s)

Fig. 13-42

5-4-5. Serial interface protocol

Data Terminal Ready

A hardware handshake is available with the printer. The Data Terminal Ready (DTR) signal line is available for hardware handshake at pin 20 of the serial connector. This signal line is always operating, it does not require enabling.

The DTR signal line indicates whether the printer is "ready" or "not ready" for data. When the printer is ready for data, the DTR signal switches to a High (or low, if the DTR line is set for inverted operation). The printer will request data when the following three conditions exist:

1. when its 1K byte buffer has less than 64 bytes of data (has at least 960 bytes empty),

2. when it is ON-LINE, and

3. when it is not BUSY.

The DTR signal goes Low (high, if the DTR line is set for inverted operation) when the printer is not ready to accept data. Data will not be accepted by the printer when any one of the following conditions exist:

★ the I/O buffer has 960 bytes empty,

★ it is OFF-LINE, or

★ it is in a BUSY state (such as performing Self-Test).

Transitions on the line correspond to the transmissions of Xon (asserted) and Xoff (not-asserted).

The signal logic or "sense" of the DTR signal line can be switched to either active high or active low from the operator panel on the printer. To select the DTR line for active high polarity select DTR POLARITY=HI* using the Printer Operator Panel configuration menu; to select active low polarity set the configuration menu item to DTR POLARITY=L0*.

Xon/Xoff

Xon/Xoff is a data stream handshake protocol which sends Xon (DC1; 11hex) to the computer when the printer is able to accept data and sends Xoff (DC3; 13hex) when the printer is not ready for data.

The printer transmits an Xon when it is ready to accept more data from tthe host. The printer requests data when the following three conditions exist:

1. when its 1K byte buffer has less than 64 bytes of data (has at least 960 bytes empty),

2. when it is ON-LINE, and

3. when it is not BUSY.

If no data is received within approximately one second of the transmission of an Xon, the printer may be configured so that it sends additional Xon's at one second intervals until data is received. The ROBUST-XON operator Panel configuration menu item is used to select whether additional Xon's should be transmitted. If ROBUST-XON is set to On, additional Xon's will be transmitted at one second intervals until data is received. If ROBUST-XON is set to off, additional Xon's are not transmitted. The factory setting is ROBUST-XON set to On.

Xoff's are transmitted by the printer to indicate that the printer is not ready to accept data. An Xoff is transmitted when any one of the following conditions exist:

★ the I/O buffer has 960 bytes empty,

★ it is OFF-LINE, or

★ it is in a BUSY state (such as performing Self-Test).

If additional data bytes are received from the host after the Xoff is transmitted, additional Xoff characters are transmitted everytime it receives additional data. Also, an Xoff is transmitted as soon as the Message Display changes to WARMING UP when the printer is powered on.
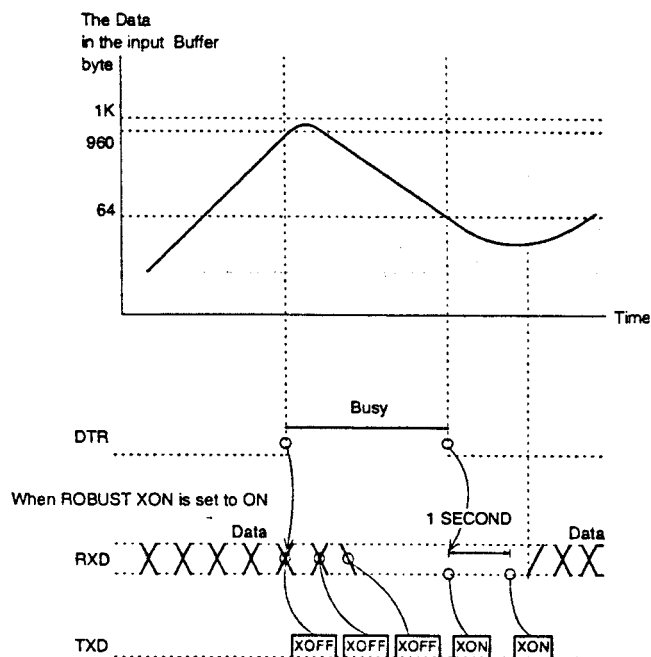
5-5. RS232C AppleTalk board

The RS232C circuit is as described in the previous paragraphs.
An SCC 85C30 is used for the AppleTalk and runs in the FM mode of
the SDLC synchronous protocol.

Fig. 13-43

Data encode method

Data encode method

Fig. 13-44

BLOCK DIAGRAM
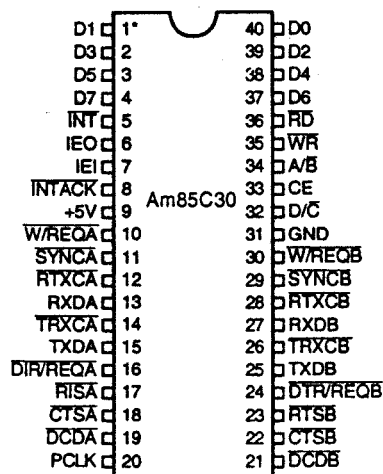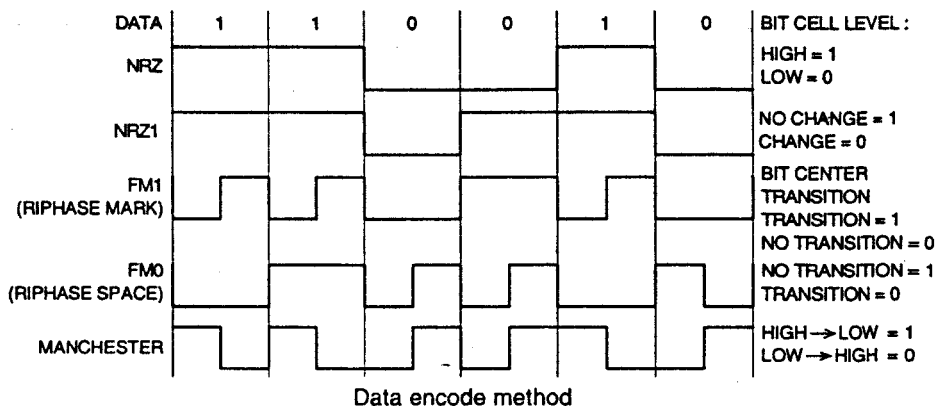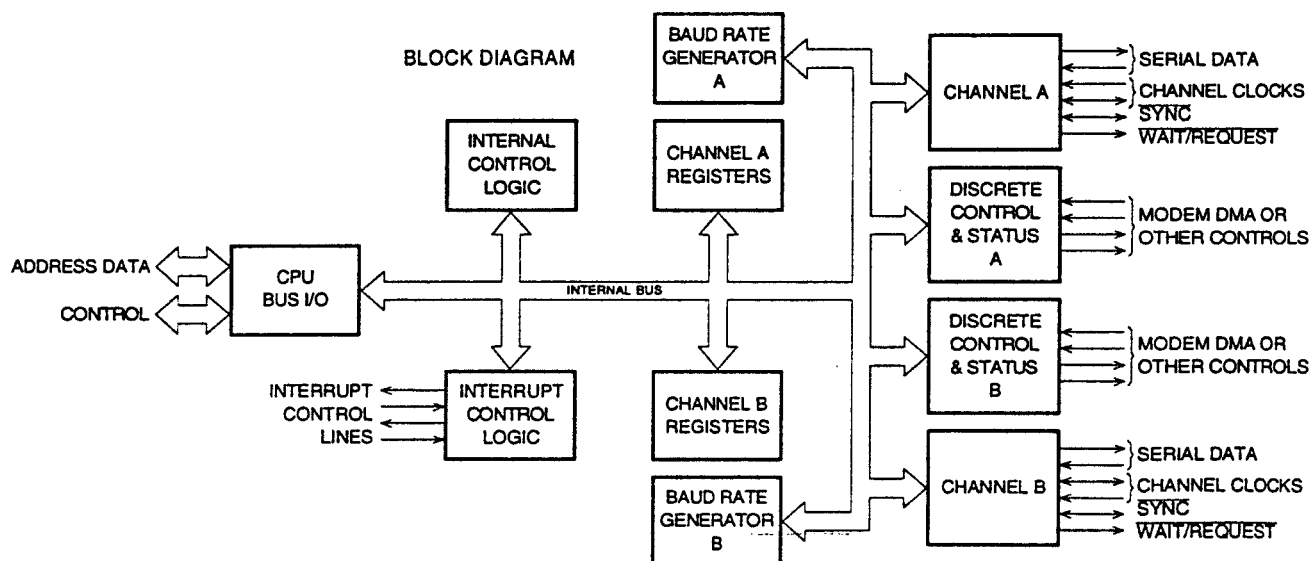
Fig. 13-45

6. Firmware basic structure

1. General

This model performs automatic selection of emulation and interface, and prints at resolution of 600 DPI in PostScript emulation.

It performs 6 kinds of emulation: HP LJIII, EPSON FX-80, IBM Pro-Printer, IBM GraphicsPrinter, PostScript resolution 300 DPI and 600 DPI, and AUTO emulation. For PortScript (including PostScript in AUTO mode), selection of 600/300 resolution is performed.

It has Parallel interface, Serial interface, and AppleTalk (LocalTalk) interface. In AUTO interface, data can be received by interruption from all three kinds of interface.

SoftBand realizes PostScript emulation with less memory capacity than required for normal PostScript emulation by use of the display list and the band buffer in PostScript emulation.

MultiGray is the technique which makes halftone gradation high gradation in PostScript.

Memory and emulation

The table below shows the relationship between memory capacity and emulation.

☐: Enables operation.
◊: Enables operation. (Allows page protect except for legal.)
♦: Enables operation. (Allows all kinds of page protect.)
O: Enables operation. (SoftBand technology is used.)
X: Disables operation.

Memory capacity	HP	FX/ PP/ GP	PS		AU		
			300	600	HP	PS 300	PS 600
1M	☐	☐	X	X	X	X	X
2M	◊	☐	◊	O	X	X	X
3M	♦	☐	♦	O	◊	◊	O
4M-5M	♦	☐	♦	O	♦	♦	O
6M	♦	☐	♦	◊	♦	♦	◊
7M-9M	♦	☐	♦	♦	♦	♦	♦

2. Description of internal operation

2-1. General

The basic structure consists of the following four categories.

1. PLI (Printer Language Interpreters)
2. PDI (Page Description Interface)
3. Supervisor
4. BIOS

2-2. PLI (Printer Language Interpreters)

This is where the data received from the host is translated. There are PLI's for the HP LaserJet III, three emulators, and Postscript (option). Operation starts according to the emulator selected on the keyboard.

NOTE: The program developed by Phoenix Technologies Ltd., is used for PLI of the HP LaserJet III.

2-3. PDI (Page Description Interface)

The Page description interface is used for image kernel and graphics interface for bitmap raster devices. This is where the command interpreted by PLI is used to create the data to print on the printer, in which contained groups of functions needed to draw straight line for HP-GL/2 and circle. This part is common to all regardless of emulators.

NOTE: The program developed by Phoenix Technologies Ltd., is used for PDI of the HP LaserJet III.

2-4. Supervisor (printer OS)

As the system operates in the multitask mode, the task-to-task control and printer engine control are managed by the supervisor.
This consists of four blocks.

1. Host I/O
2. Printer state
3. Panel manager
4. Option manager

2-4-1. Host I/O

This is where the data from the host is controlled. All input buffers contains data that give instruction to the emulators (PLI) for translation.

2-4-2. Printer state

The operating state of the printer engine is monitored. When an error is encountered, the error state is informed to the task. It also controls the printer engine startup and paper release and deletion of internal data.

2-4-3. Panel manager

Used to control the control panel and informs display and change to the relevant tasks.

2-4-4. Option manager

Used to control the EEPROM.

2-5. BIOS

This is a routine employed to directly control the hardware that consists of the power-on initialize interrupt routine and I/O control.

1. Parallel interrupt routine
2. RS232C interrupt routine
3. AppleTalk interrupt routine
4. Front panel (PCU interrupt routine)
5. Engine (PCU interrupt routine)
6. Async interrupt routine
7. EEPROM read/write routine
8. Timer interrupt routine

3. Actual data flow

Here, an explanation will be given for the internal operation from the reception of data through the Centronics interface until the completion of print.

1. The data received from the host is recognized by the parallel interrupt and stored in the input buffers within the parallel interrupt routine.

2. As the data were stored in the input buffers, the PLI task starts to run by the supervisor.

3. The PLI interprets the ESC commands and creates an intermediate language (display list) using functions in PDI.

4. Above 1 to 3 are repeated until the paper release command is received or turned over to a next page.

5. If paper eject occurred, the print start request is issued to the supervisor (printer state).

6. A pre-feed command is sent to the printer engine, and the band buffers start to work based on the display list.

7. Band buffers reside on the internal RAM. The capacity of buffer will change as mentioned next according to the page protection mode setting and paper size.
   Page protection at OFF
     Five bands of 308 bytes wide, 100 lines long.

Paper protection at LE
  Frame buffer of 308 bytes wide, 3300 lines long.
Page protection at LL
  Frame buffer of 308 bytes wide, 4200 lines long.
Page protection at A4
  Frame buffer of 308 bytes wide, 3507 lines long.

8. Bits are developed until the band buffers (frame buffer) are fully occupied or the display list is done.

9. Upon completion of the above 8, the printer engine is commanded to start printing.

10. An Async interrupt is caused with the Hsync signal from the printer engine, the interrupt routine reads data from the band buffers, and written in the output buffer (FIFO).
    The hardware causes to send the video data from FIFO to the printer engine.

11. If page protection was set to OFF, the remaining display list is bitmap developed in the band buffer when the data in a band buffer has been completed to send.

12. This is repeated until the entire print area is completed.

13. The display list is cancelled with the eject command from the printer engine.
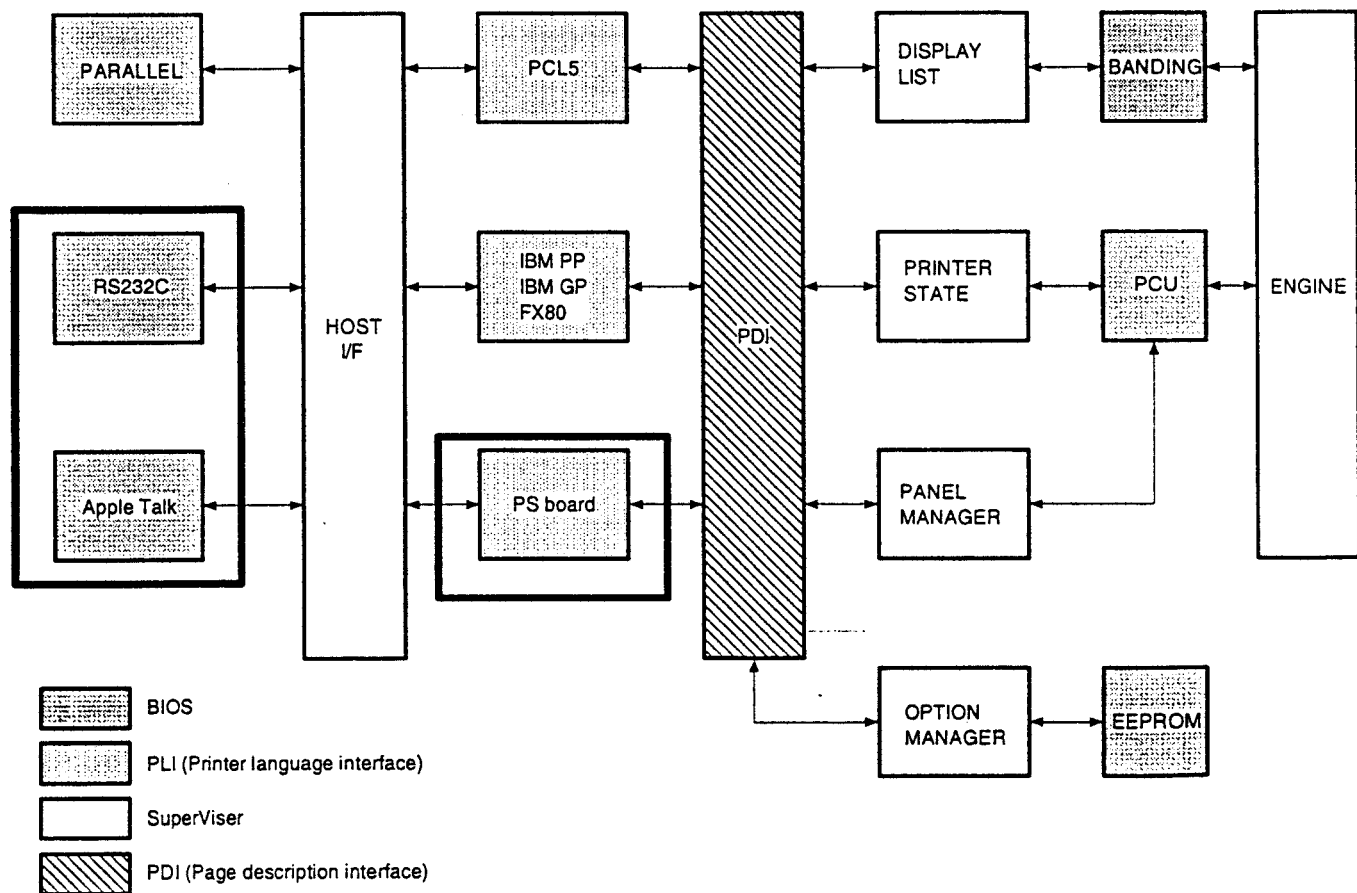
Fig. 13-46

4. Display/keyboard

LCD section: 16 digits, 1 line
              5 languages
LED section: Error lamp (Red)
              Line lamp (Green)
              Data lamp (Orange)
              Manual lamp (Orange)
Key section: 8 keys

4-1. Error lamp (Red)

When an error occurs:
    ON
When an error is cancelled:
    OFF

4-2. Line lamp

On-line: ON
Off-line: OFF
During data reception:
              Blink

JX-9460PS

4-3. Data lamp

There is print data:
ON
There is no print data:
OFF
There is print data and there
is a vacancy more than 5 sec in print data forming:
Blink

4-4. Manual lamp (Orange)

Manual feed: ON
Cassette feed: OFF

4-5. Key

For the key functions, refer to [2]-1 Key function.

7. MENU SETTING STRUCTURE

7-1. HP PCL 5 EMULATION
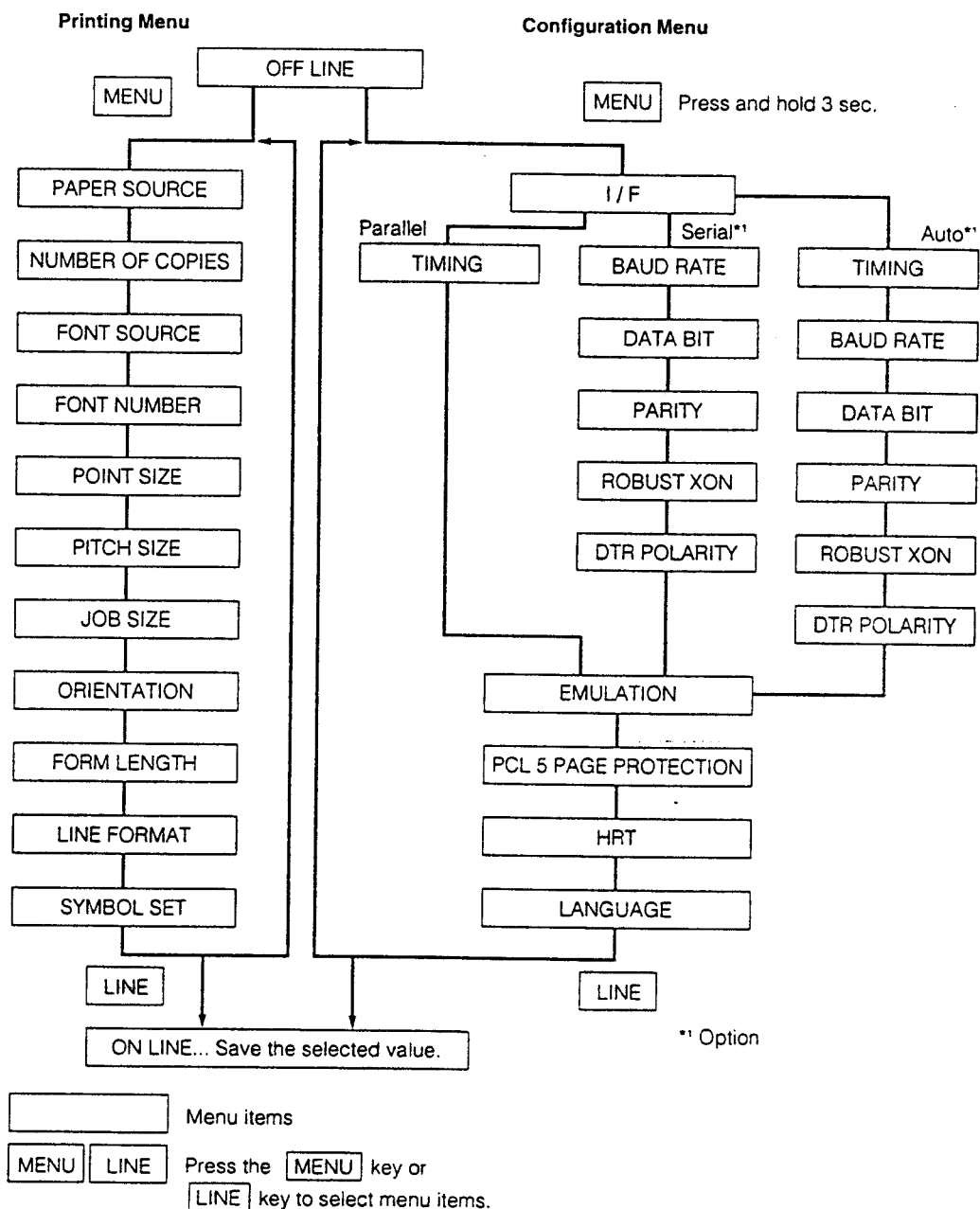
Fig 13-47

7-2. POSTSCRIPT EMULATION

This setting is made when the optional PS board is installed. (Provided as a standard feature in JX-9460PS.)
To use the PostScript Emulation, at least 2 Mbyte memory is required.
The keys used to select menu items and values and the setting procedure are the same as those used for HP PCL 5 emulation.

Interface

APPLETALK interface can be operated only when a corresponding option board is mounted.

1. Press the [LINE] key to set the printer offline.

2. Press and hold the [MENU] key until "I/F=PARALLEL*" appears on the display.

3. Press the [MENU] key several times until "EMULATION=HPLJ3*" appears on the display.

4. Press the △ or ▽ key to select PS.
5. Press the [ENTER/RESET MENU] key.

   • An asterisk (*) appears on the right side of the display.

6. Press and hold the [MENU] key until "I/F=PARALLEL*" appears on the display.

7. Press the △ or ▽ key to select APPLETALK.

8. Press the [ENTER/RESET MENU] key.

   • An asterisk (*) appears on the right side of the display.

9. Press the [LINE] key once so that "READY [PS]T" appears on the display to save the setting and the ON LINE lamp lights.

Resolution

Print resolution can be switched between 300 dpi and 600 dpi. The default is set at 600 dpi. High resolution technology can not be used when the resolution is set at 600 dpi.
This printer employs SoftBand technology*. SoftBand technology enables 600 dpi printing with a 2 Mbyte memory capacity, and affords shorter printing time. However, when printing data with complex graphics or numerous downloaded fonts, you may need additional memory.

* SoftBand technology allows PostScript printing, which normally requires a large amount of memory, to be conducted with a small memory capacity.

MultiGray Technology

This technology enables high quality gradation-level printing. Turning this function to ON doubles the number of your gradation levels. Switch between ON and OFF in accordance with your application. (Turn the function to ON when you want to effect a smooth transition between the gradation levels of your graphics. Turn the function to OFF when you want to emphasize the differences between gradation levels.)

PS Page Protection

PS page protection reserves additional memory for the page image process, allowing the printer to create the entire page image in memory even if a page is too complex to print. In the PostScript Emulation mode, PS page protection can be switched to ON or OFF.
If you set this function to ON, the required memory capacity depends on the defined job size, emulation mode and resolution value.

NOTE: When this function is ON, the print speed is reduced.

Printing Menu Reference Guide

Item	Printer Display	Selectable Value
Paper source	TRAY=A4	A4 (LETTER, LEGAL, ENVELOPE), MANUAL FEED

Configuration Menu Reference Guide

Item	Printer Display	Selectable Value
Interface	I/F=PARALLEL	PARALLEL, SERIAL[1] APPLETALK[1], AUTO[1]
Timing	TIMING=1	1, 2, 3
Baud rate[1]	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit[1]	DATA BIT=8	8, 7
Parity[1]	PARITY=NON	NON, EVN, ODD
Robust XON[1]	ROBUST XON=ON	ON, OFF
DTR polarity[1]	DTR POLARITY=HI	HI (High), LO (Low)
Emulation	EMULATION=PS	HPLJ3, FX80, IBMPP, IBMGP, HEX, PS[1], AUTO[1]
Resolution[1]	RESOLUTION=600	600, 300
High resolution technology[2]	HRT=ON	ON, OFF
MultiGray technology[1]	MULTIGRAY=ON	ON, OFF
PS page protection	PS PAGE P.=OFF	OFF, ON
Message	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

[1] Option
[2] Gray-level transitions may be adversely affected when gray-scale images are printed with this function on. If this is the case, set HRT=OFF in the Configuration Menu.

JX-9460PS

POSTSCRIPT EMULATION

Printing Menu **Configuration Menu**

OFF LINE

MENU

MENU Press and hold 3 sec.

PAPER SOURCE

I / F

Parallel Serial*¹ Auto*¹

TIMING BAUD RATE TIMING

LINE

DATA BIT BAUD RATE

ON LINE... Save the selected value.

PARITY DATA BIT

ROBUST XON PARITY

AppleTalk*¹ DTR POLARITY ROBUST XON

DTR POLARITY

EMULATiON

RESOLUTION*¹

RESOLUTION = 300 RESOLUTION = 600

HRT

MULTIGRAY MULTIGRAY

PS PAGE PROTECTION PS PAGE PROTECTION

LANGUAGE

LINE *¹ Option
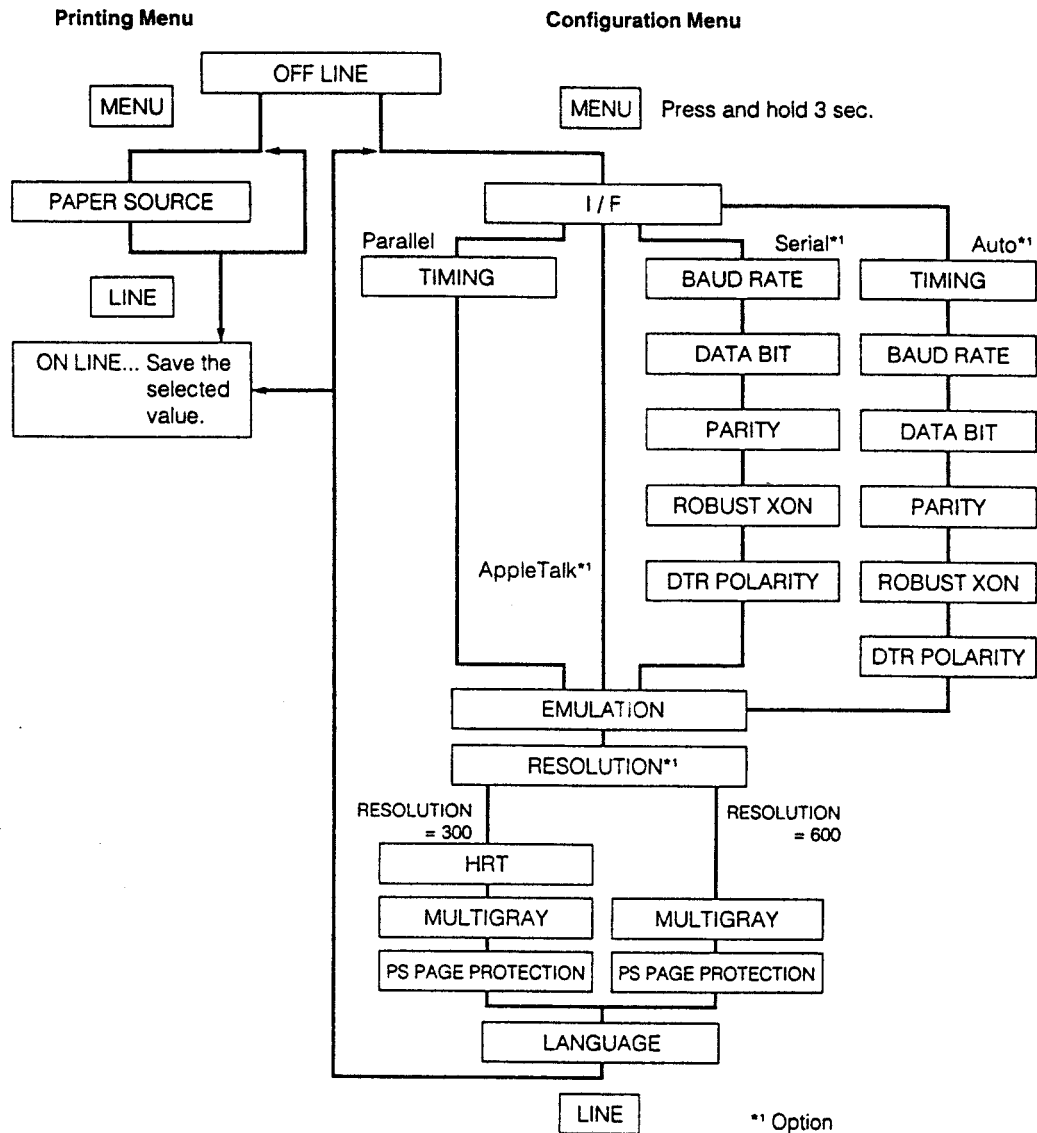
Menu items

MENU LINE Press the MENU key or
LINE key to select menu items.

Fig. 13-48

– 101 –

7-3. AUTO EMULATION MODE

Automatic Emulation Switching Function

Setting emulation to AUTO enables the printer to switch the emulation mode automatically between PostScript and HP PCL 5.
This function can be used only when the PostScript board is installed.
For setting this function, at least 3Mbyte memory is required.

1. Press the [LINE] key to set the printer offline.
2. Press and hold the [MENU] key until "I/F=PARALLEL✳" appears on the display.
3. Press the [MENU] key several times until "EMULATION=HPLJ3✳" appears on the display.
4. Press the △ or ▽ key to select AUTO.
5. Press the [ENTER/RESET MENU] key.
   • An asterisk (✳) appears on the right side of the display.
6. Press the [LINE] key once so that "READY [AUTO]↑" appears on the display to save the setting.

NOTE:
• Automatic emulation switching function is not applied to the other three emulations (Epson FX-80, IBM Proprinter, and IBM Graphics Printer).
• When you use automatic emulation switching, the memory is allocated to each emulation. One emulation, therefore, cannot use full memory. To use full memory from one emulation, set Emulation to the desired emulation (for example, HP PCL 5).
• If you set the page protection mode to ON, the required memory capacity depends on the defined job size, emulation mode and resolution value. See table below.

(M: Mbyte)

EMULATION / PAPER SIZE	HP PCL 5	PostScript		Auto		
		300 dpi	600 dpi	HP PCL 5	PostScript 300 dpi	600 dpi
A4/LETTER	2M	2M	6M	3M	3M	6M
LEGAL	3M	3M	7M	4M	4M	7M

Printing Menu Reference Guide

Item	Printer Display	Selectable Value
Paper source	TRAY=A4	A4 (LETTER, LEGAL, ENVELOPE), MANUAL FEED
Number of copies	COPIES=1	1, 2, ... 99
Font source	FONT SOURCE=I	I (Internal) / A (Slot) / S (Soft font)
Font number	FONT NUMBER=0	0, 1, ... 999
Point size[1]	PT. SIZE=12.00	4.00, ... 999.75
Pitch size[2]	PITCH=10.00	0.44, ... 99.99
Job size	JOB SIZE=A4	LETTER, LEGAL, A4, COM-10, MONARC, DL, C5
Orientation	ORIENTATION=P	P (Portrait) / L (Landscape)
Form length	FORM LENGTH=64	5, 6, ... 128
Line format	LINE FORMAT=77	77, 80
Symbol set	SYM. SET=ROMAN-8	See page 41.

[1] Point size applies only to outline fonts with proportional-spacing.
[2] Pitch size applies only to outline fonts with fixed-spacing.

Configuration Menu Reference Guide

Item	Printer Display	Selectable Value
Interface	I/F=PARALLEL	PARALLEL, SERIAL[1], APPLETALK[1], AUTO[1]
Timing	TIMING=1	1, 2, 3
Baud rate[1]	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit[1]	DATA BIT=8	8, 7
Parity[1]	PARITY=NON	NON, EVN, ODD
Robust XON[1]	ROBUST XON=ON	ON, OFF
DTR polarity[1]	DTR POLARITY=HI	HI (High), LO (Low)
Emulation	EMULATION=AUTO	HPLJ3, FX80, IBMPP, IBMGP, HEX, PS[1], AUTO[1]
PCL 5 page protection	LJ3 PAGE P.=OFF	OFF, LE, LL, A4
Resolution[1]	RESOLUTION=600	600, 300
High resolution technology	HRT=ON	ON, OFF
MultiGray technology[1]	MULTIGRAY=ON	ON, OFF
PS page protection	PS PAGE P.=OFF	OFF, ON
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

[1] Option

JX-9460PS

MENU SETTING STRUCTURE AUTO EMULATION

Printing Menu   **Configuration Menu**

OFF LINE

MENU   MENU   Press and hold 3 sec.

PAPER SOURCE   I / F

NUMBER OF COPIES   Parallel   Serial*¹   Auto*¹

TIMING   BAUD RATE   TIMING

FONT SOURCE   DATA BIT   BAUD RATE

FONT NUMBER   PARITY   DATA BIT

POINT SIZE   AppleTalk*¹   ROBUST XON-   PARITY

PITCH SIZE   DTR POLARITY   ROBUST XON

JOB SIZE   EMULATION   DTR POLARITY

ORIENTATION   PCL 5 PAGE PROTECTION

FORM LENGTH   RESOLUTION*¹

LINE FORMAT   RESOLUTION   RESOLUTION
                        = 300   = 600
SYMBOL SET   HRT

                        MULTIGRAY   MULTIGRAY

                        PS PAGE PROTECTION   PS PAGE PROTECTION
LINE

                                    LANGUAGE

                                                    LINE

ON LINE... Save the selected value.   *¹ Option

                Menu items

MENU   LINE   Press the   MENU   key or
               LINE   key to select menu items.

Fig. 13-49

-103-

7-4. OTHER EMULATIONS

For the Epson FX-80, IBM Proprinter, and IBM Graphics Printer emulations, the menu setting structure, setting items, and selectable values differ depending on the emulation.

The keys used to select menu items and values and the setting procedure are the same as those used for HP PCL 5 emulation.

With these emulations, the following items can be selected in addition to the items for the HP PCL 5 emulation.

Page Size Page size selects the number of lines that can be printed on a page. There are two modes: normal and extended.

Normal: Prints the normal number of lines
Extended: Prints the extended number of lines

Example:
On A4 size Normal up to 67 lines
Extended up to 70 lines

For extended size printing of characters, the space between the lines is reduced. However, bit images are uniformly compressed vertically. A circle, for example, will be printed as an oval.

Auto Feed
(FX-80 only) This is effective only when the parallel interface is selected. When off and $\overline{\text{AUTO LF}}$ (pin 14 on the parallel interface connector) is enabled, the CR and LF operations are performed for a CR code input only. When $\overline{\text{AUTO LF}}$ is on, the control signals on pin 14 are ignored and always fixed to $\overline{\text{AUTO LF}}$ mode.

Fixed Select
(FX-80 only) This is effective only when the parallel interface is selected. When on, $\overline{\text{SELECT IN}}$ (pin 36 on the parallel interface connector) is ignored and the printer is always in the select mode. When off, $\overline{\text{SELECT IN}}$ is effective and the printer is deselected by an input of the DC3 code only when this signal is high.

Epson FX-80 Emulation

Printing Menu Reference Guide

Item	Printer Display	Selectable Value
Paper source	TRAY=A4	A4 (LETTER, LEGAL, ENVELOPE), MANUAL FEED
Number of copies	COPIES=1	1, 2, ... 99
Font number	FONT NUMBER=0	0 (COURIER) 1 (CONDENSE) 2 (EMPHASIZE) 3 (CONDENSE EMPHASIZE)
Job size	JOB SIZE=A4	LETTER, LEGAL, A4, COM-10, MONARC, DL, C5
Orientation	ORIENTATION=P	P (Portrait) L (Landscape)
Page size	PG SIZE=NORMAL	NORMAL, EXTEND
National character	NATIONAL=U.S.A.	U.S.A., FRANCE, GERMNY, ENGLND, DNMRK1, SWEDEN, ITALY, SPAIN, JAPAN, NORWAY, DNMRK2

Configuration Menu Reference Guide

Item	Printer Display	Selectable Value
Interface	I/F=PARALLEL	PARALLEL, SERIAL*, AUTO*
Timing	TIMING=1	1, 2, 3
Baud rate*	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit*	DATA BIT=8	8, 7
Parity*	PARITY=NON	NON, EVN, ODD
Robust XON*	ROBUST XON=ON	ON, OFF
DTR polarity*	DTR POLARITY=HI	HI (High), LO (Low)
Emulation	EMULATION=FX80	HPLJ3, FX80, IBMPP, IBMGP, HEX, PS*, AUTO*
High resolution technology	HRT=ON	ON, OFF
Auto feed	AUTO FEED=OFF	OFF, ON
Fixed select	FIX SELECT=ON	ON, OFF
Auto line feed	AUTO LF=OFF	OFF (CR=CR) ON (CR=CR+LF)
Zero character	ZERO=0	0, Ø
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

* Option

JX-9460PS

Epson FX-80

FX-80 MENU SETTING STRUCTURE

Printing Menu   **Configuration Menu**

```
                          ┌─────────────┐
                          │  OFF LINE   │
┌───────┐                 └─────────────┘              ┌───────┐
│ MENU  │                                              │ MENU  │  Press and hold 3 sec.
└───────┘                                              └───────┘

┌──────────────────────┐                    ┌──────────────────────┐
│    PAPER SOURCE       │                    │         I / F        │
└──────────────────────┘          Parallel   └──────────────────────┘   Auto*¹
                                           Serial*¹
┌──────────────────────┐        ┌─────────┐ ┌───────────┐  ┌───────────┐
│   NUMBER OF COPIES    │        │ TIMING  │ │ BAUD RATE │  │  TIMING   │
└──────────────────────┘        └─────────┘ └───────────┘  └───────────┘

┌──────────────────────┐                    ┌───────────┐  ┌───────────┐
│     FONT NUMBER       │                    │ DATA BIT  │  │ BAUD RATE │
└──────────────────────┘                    └───────────┘  └───────────┘

┌──────────────────────┐                    ┌───────────┐  ┌───────────┐
│       JOB SIZE        │                    │  PARITY   │  │ DATA BIT  │
└──────────────────────┘                    └───────────┘  └───────────┘

┌──────────────────────┐                    ┌───────────┐  ┌───────────┐
│     ORIENTATION       │                    │ ROBUST XON│  │  PARITY   │
└──────────────────────┘                    └───────────┘  └───────────┘

┌──────────────────────┐                    ┌───────────┐  ┌───────────┐
│      PAGE  SIZE       │                    │DTR POLARITY│ │ROBUST XON │
└──────────────────────┘                    └───────────┘  └───────────┘

┌──────────────────────┐                                   ┌───────────┐
│  NATIONAL CHARACTER   │                                   │DTR POLARITY│
└──────────────────────┘                                   └───────────┘

      ┌───────┐                             ┌───────────────┐
      │ LINE  │                             │   EMULATION   │
      └───────┘                             └───────────────┘

                                            ┌───────────────┐
                                            │      HRT       │
┌──────────────────────┐                    └───────────────┘
│ ON LINE... Save the   │                   ┌───────────────┐
│        selected       │ ◄──               │   AUTO FEED    │
│         value.        │                   └───────────────┘
└──────────────────────┘                    ┌───────────────┐
                                            │  FIXED SELECT  │
                                            └───────────────┘
                                            ┌───────────────┐
                                            │ AUTO LINE FEED │
                                            └───────────────┘
                                            ┌───────────────┐
                                            │ ZERO CHARACTER │
                                            └───────────────┘
                                            ┌───────────────┐
                                            │    LANGUAGE    │
                                            └───────────────┘

                                                ┌───────┐
                                                │ LINE  │       *¹ Option
                                                └───────┘
```

┌──────────┐
│   │ Menu items
└──────────┘

┌───────┐ ┌──────┐
│ MENU │ │ LINE │ Press the [MENU] key or [LINE] key to select menu items.
└───────┘ └──────┘
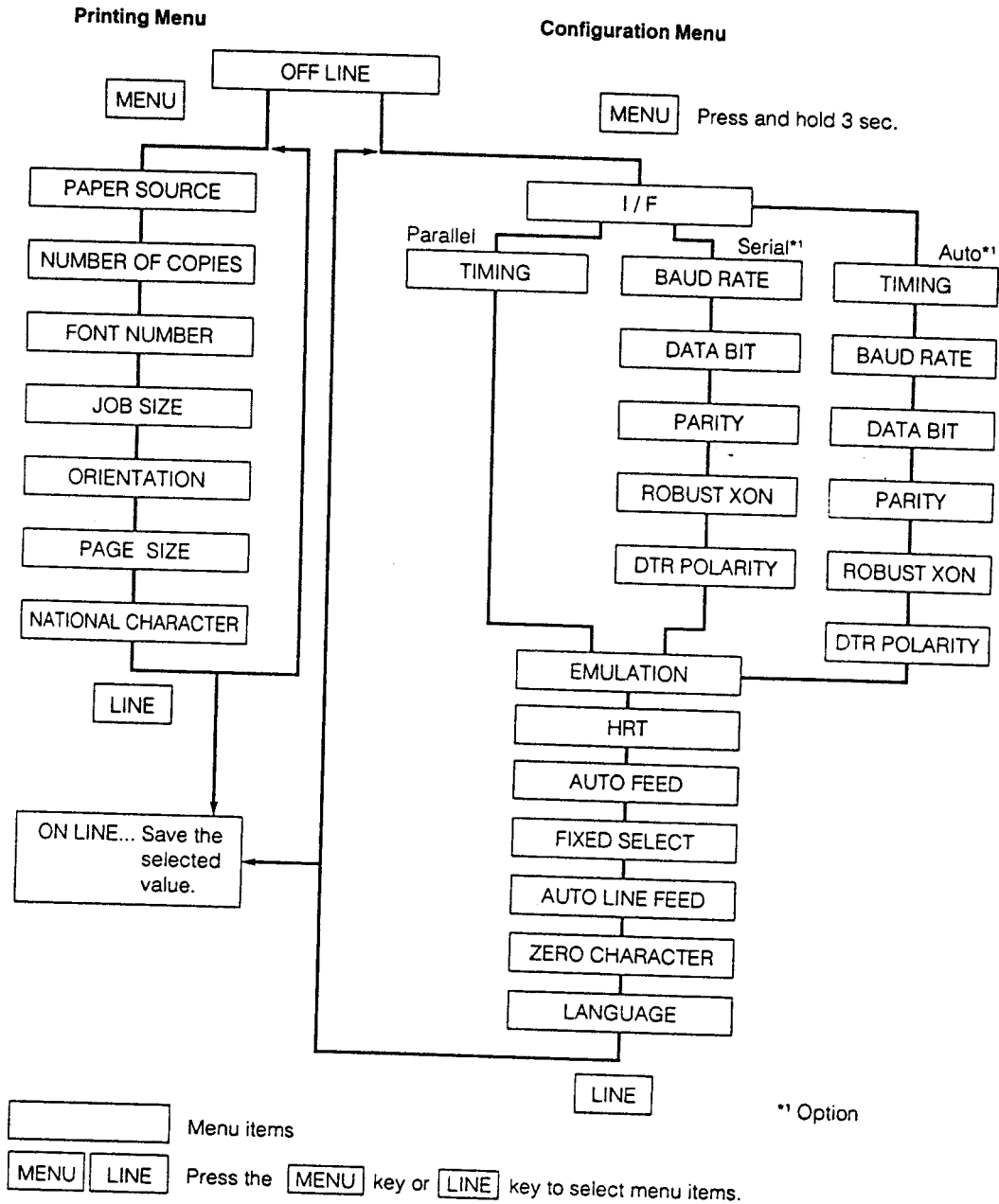
Fig. 13-50

IBM Proprinter/Graphics Printer Emulations

Printing Menu Reference Guide

Item	Printer Display	Selectable Value
Paper source	TRAY=A4	A4 (LETTER, LEGAL, ENVELOPE), MANUAL FEED
Number of copies	COPIES=1	1, 2, ... 99
Font number	FONT NUMBER=0	0 (CHARACTER SET 1)
		1 (CHARACTER SET 2)
Job size	JOB SIZE=A4	LETTER, LEGAL, A4, COM-10, MONARC, DL, C5
Orientation	ORIENTATION=P	P (Portrait)
		L (Landscape)
Page size	PG SIZE=NORMAL	NORMAL, EXTEND
National character	NATIONAL=GLOBAL	GLOBAL (International)
		D/N (Denmark/Norway)

Configuration Menu Reference Guide

Item	Printer Display	Selectable Value
Interface	I/F=PARALLEL	PARALLEL, SERIAL[1], AUTO[1]
Timing	TIMING=1	1, 2, 3
Baud rate[1]	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit[1]	DATA BIT=8	8, 7
Parity[1]	PARITY=NON	NON, EVN, ODD
Robust XON[1]	ROBUST XON=ON	ON, OFF
DTR polarity[1]	DTR POLARITY=HI	HI (High), LO (Low)
Emulation	EMULATION=IBMPP	HPLJ3, FX80, IBMPP, IBMGP, HEX, PS[1], AUTO[1]
High resolution technology	HRT=ON	ON, OFF
Auto line feed	AUTO LF=OFF	OFF (CR=CR) ON (CR=CR+LF)

Auto carriage return[2]	AUTO CR=OFF	OFF LF=LF
		    VT=VT
		     ESCJ=ESCJ
		ON LF=LF+CR
		    VT=VT+CR
		     ESCJ=ESCJ+CR

Zero character[2]	ZERO=0	0, Ø
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

[1] Option
[2] IBM Proprinter only

IBM Proprinter/Graphics Printer
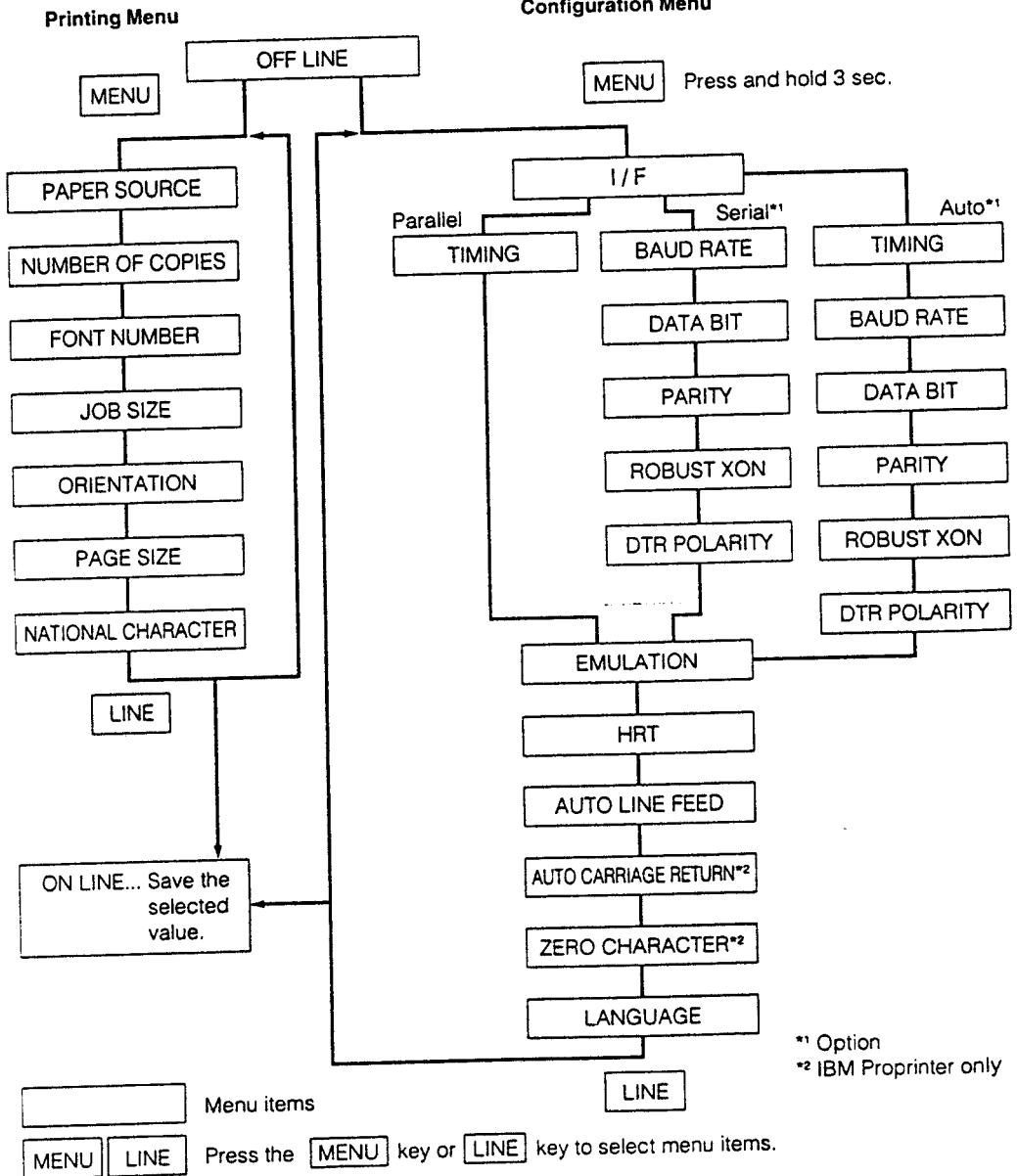
Fig. 13-51

[1] Option
[2] IBM Proprinter only

7-5. EMULATION MODE DEFAULTS

Lines per Page

The lines per page will always default to the number given below when the printer is turned on.

Normal Size

EMULATION	LPI[1]	ORIENTATION	PORTRAIT						
		PAPER SIZE[2]	LE	LL	A4	CM	MO	C5	DL
HP PCL 5	6 LPI		60	78	64	51	39	48	45
Epson FX-80	6 LPI		63	81	67	54	42	51	49
IBM ProPrinter	8 LPI		83	107	89	71	55	67	65
IBM Graphics Printer	12 LPI		125	161	133	107	83	101	97

Normal Size

EMULATION	LPI[1]	ORIENTATION	LANDSCAPE						
		PAPER SIZE[2]	LE	LL	A4	CM	MO	C5	DL
HP PCL 5	6 LPI		45	45	43	18	17	32	19
Epson FX-80	6 LPI		48	48	46	21	20	35	22
IBM ProPrinter	8 LPI		63	63	62	28	26	46	30
IBM Graphics Printer	12 LPI		95	95	92	42	39	69	44

Extended Size

EMULATION	LPI[1]	ORIENTATION	PORTRAIT						
		PAPER SIZE[2]	LE	LL	A4	CM	MO	C5	DL
Epson FX-80	6 LPI		66	85	70	56	44	53	51
IBM ProPrinter	8 LPI		88	113	93	75	58	71	68
IBM Graphics Printer	12 LPI		131	169	140	112	87	106	102

Extended Size

EMULATION	LPI[1]	ORIENTATION	LANDSCAPE						
		PAPER SIZE[2]	LE	LL	A4	CM	MO	C5	DL
Epson FX-80	6 LPI		50	50	49	24	21	37	24
IBM ProPrinter	8 LPI		66	66	65	30	28	49	31
IBM Graphics Printer	12 LPI		99	99	97	44	41	73	47

This mode can be used with the Epson FX-80, IBM Proprinter, and IBM Graphics Printer emulations.

[1] LPI ... line per inch

[2] Paper size
LE ... Letter
LL ... Legal
CM .. Commercial 10 (Business)
MO .. Monarch
C5 .. International C5
DL .. International DL

Printing Width

The printing width for each paper size is shown below. This printer provides the HPGL/2 mode and the PCL 5 mode. The printing width differs between these two modes.

The maximum printing width on A4 size paper is 2,400 dots, allowing 80 characters to be printed on one line at 10 cpi.

NOTE: When printing 80 characters/line on A4 size paper, in some cases characters may print beyond the paper edge. Avoid printing 80 characters/line on A4 size paper and reduce the number of characters per line.
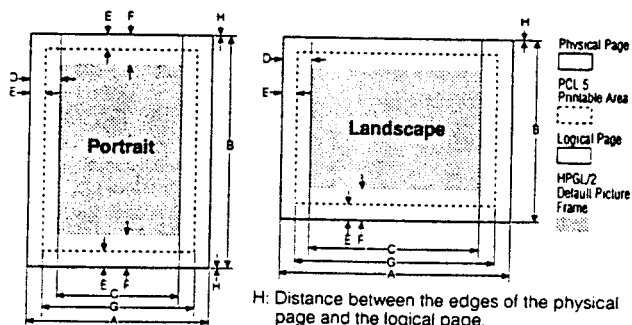
H: Distance between the edges of the physical page and the logical page.

Portrait

(Unit: dots)

Paper Size	A	B	C	D	E	F	G	H
LETTER	2550	3300	2400	75	50	150	2450	0
LEGAL	2550	4200	2400	75	50	150	2450	0
A4 (77 Chars.)	2480	3507	2338	71	50	150	2380	0
A4 (80 Chars.)	2480	3507	2400	71*	50*	150	2400	0
COM-10	1237	2850	1087	75	50	150	1137	0
MONARCH	1162	2250	1012	75	50	150	1062	0
C5	1913	2704	1771	71	50	150	1813	0
DL	1299	2598	1157	71	50	150	1199	0

* Not applicable to the right side

Landscape

(Unit: dots)

Paper Size	A	B	C	D	E	F	G	H
LETTER	3300	2550	3180	60	50	150	3200	0
LEGAL	4200	2550	4080	60	50	150	4100	0
A4 (77 & 88 Chars.)	3507	2480	3389	59	50	150	3407	0
COM-10	2850	1237	2730	60	50	150	2750	0
MONARCH	2250	1162	2130	60	50	150	2150	0
C5	2704	1913	2586	59	50	150	2604	0
DL	2598	1299	2480	59	50	150	2498	0

7-6. PostScript operation

The PostScript emulation of this model has two resolutions of 300 and 600. Selection between the two resolutions is made with the key and PostScript operation.

<Resolution selection and memory>

Buffer composition
Buffer composition is changed by the setting of page protection.
Page protection ON: The full page buffer is used.
Page protection OFF: The band buffer and the display list are used.

Resolution selecting procedure

1. When the resolution was changed with the key menu, press "LINE" key in the key menu. After the machine goes into the online state, change the resolution.

2. When the resolution was changed with the "setResolution" command, do not change the resolution at the time when "setDefaultResolution" is received, but change the content of EEPROM.
After receiving "setDefaultResolution," when JobEnd(^D) is received, set the resolution to level which is set in the EEPROM.

<Additional operation>

The following four operations are added to the JX-9460 600 DPI.

* setresolution: To change the resolution to the specified DPI.
* resolution: To reset the resolution.
* setdefaultresolution: To set the default resolution level.
* defaultresolution: To reset the default resolution.

<Example of operations>

The operations of setresolution and setDefaultResolution are as shown in the table below. For the table meaning, refer to the following description.

1) In the case of the content of EEPROM at the left;

2) When PostScript Operator (setResolution or setDefaultResolution) in the second from the left comes;

3) The EEPROM content is changed as shown in the third from the left;

4) Print is performed with the next job at the resolution in the fourth from the left.

5) After the above operations, when the power is turned off/on, the initial resolution is set to the value in the right end.

EEPROM content	PostScript operator	EEPROM content	Current job print resolution	Next job print resolution	Initial state after turning off/on the power
300	setRes.300	300	300	300	300
300	setRes.600	300	600	300	300
300	setDef.300	300	300	300	300
300	setDef.600	600	300	600	600
600	setRes.300	600	300	600	600
600	setRes.600	600	600	600	600
600	setDef.300	300	600	300	300
600	setDef.600	600	600	600	600

Note: setRes.300 = Specifies 300 DPI with setResolution.
 setRes.600= Specifies 600 DPI with setResolution.
 SetDef.300 = Specifies 300 DPI with setDefaultResolution.
 setDef.600 = Specifies 600 DPI with setDefaultResolution.
Bit image: When bit image data of 300 DPI is received in the set resolution of 600 DPI, the received data is subject to scaling to 600 DPI, performing printing at 600 DPI. On the contrary, when bit image data of 600 DPI is received in the set resolution of 300 DPI, the received data is subject to scaling to 300 DPI, performing printing at 300 DPI.

7-7. Factory setting at shipment

7-7-1. Basic setting

Paper source = UPPER   Form Length = 60
Jam recover = ON   Line Format = 77
Number of copies = 1 Symbol Set = ROM-8
Font Source = I   I/F = PARALLEL
Font Number = 0   Taming = 1
Point size = 12.00   Baud Rate = 9600
Pitch size = 10.00   Data Bit = 8
Job size = LETTER   Parity = NON
Orientation = P

8. EEPROM initializing

While pressing the keys indicated with shadow, supply the power to display the message, then initializing can be made.
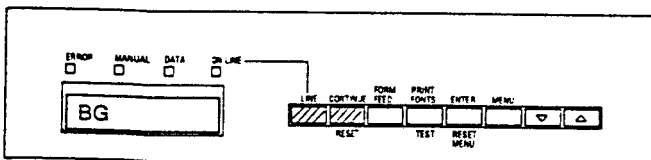
Procedure to initialize

① Cut off the printer power.

② Pressing the keys, supply the printer power.

③ Keep pressing the keys until the message is displayed.

④ Cut off the printer power.

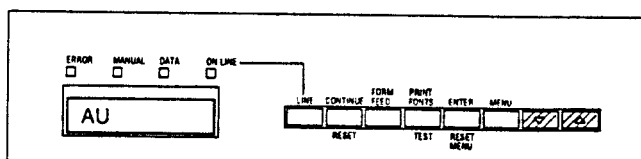### Canada and 100V series except USA

AE, AL
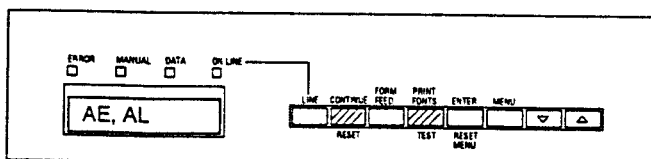
A4 = 77/80 selectable
JOB SIZE = LETTER
IBM CHR = SET 1
PS Default paper size = LETTER
I/F = Parallel
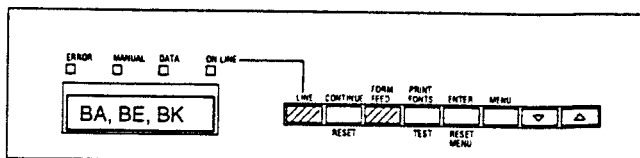
Europe

BG

A4 = 77/80 selectable
JOB SIZE = A4
IBM CHR = SET 2
PS Default paper size = A4
I/F = Parallel

USA

AU

A4 = 77 CHR.
JOB SIZE = LETTER
IBM CHR = SET 1
PS Default paper size = LETTER
I/F = Parallel

U.K., Australia and 200V series except Europe

BA, BE, BK

A4 = 77/80 selectable
JOB SIZE = A4
IBM CHR = SET 1
PS Default paper size = A4
I/F = Parallel

Fig. 13-52

9. I/F

9-1. Centronics I/F (Standard)

A. When POWER ON (Chart. 1)

First, initialization of the port is completed (OFF LINE state).
Next, internal initialization is completed and data may be inputted (ON LINE).
Then, in timings 1 ~ 3, ACK, BUSY are outputted.

B. When receiving data (Chart. 2)

Parallel interrupt occurs when DATA and STB signals are sent from the host.
Data is gathered and written into the buffer.
Then, BUSY, ACK signals are outputted in the timing 1 ~ 3.

C. BUSY state

In the below situations, the interface is in a busy state.

1. When turned OFF LINE through the keys.

2. When an error occurs. (Fig. 3)

Condition	Signal	Emulation						
		HP	FX80	IBMGP	IBMPP	D630	HEX	PS
ON LINE	SELECT	H	H	H	H	H	H	H
	BUSY	L	L	L	L	L	L	L
	FAULT	H	H	H	H	H	H	H
	PE	L	L	L	L	L	L	L
OFF LINE (KEY)	SELECT	L	H	L	L	H	L	L
	BUSY	H	H	H	H	H	H	H
	FAULT	L	L	L	H	H	L	L
	PE	L	L	L	L	L	L	L
ERROR (OP. CALL)	SELECT	L	H	L	L	H	L	L
	BUSY	H	H	H	H	H	H	H
	FAULT	L	L	L	L	L	L	L
	PE	L	L	L	L	L	L	L
ERROR (PAPER OUT)	SELECT	L	H	L	L	H	L	L
	BUSY	H	H	H	H	H	H	H
	FAULT	L	L	L	L	L	L	L
	PE	H	H	H	H	H	H	H
ERROR (MACHINE DOWN)	SELECT	L	H	L	L	H	L	L
	BUSY	H	H	H	H	H	H	H
	FAULT	L	L	L	L	L	L	L
	PE	L	L	L	L	L	L	L

L = Low level
H = High level

Centronics I/F Signal

3. When the empty area in the receiving buffer is 450 Bytes.

D. Release of BUSY state

In the following situations; the busy state of the interface can be released.

1. When turned ON LINE through the KEY.

2. When an error is released.

3. When the DATA inside the receiving buffer is 4KBytes or under.

9-2. RS232C (Option)

A. DATA FORMAT

DATA format is 1start bit
7 or 8 Data bit (Changeable through KEYs)
1 stop bit
NON/EVEN/ODD parity (Changeable through KEYs).

B. BAUD RATE

Supports 300, 600, 1200, 2400, 4800, 9600, 19200

C. Protocol

RS-232C I/F supports the following protocol.

1. XON/XOFF protocol
2. DTR protocol

C-1. XON/XOFF protocol

Xon (DC1; 11Hex)
In the following conditions, an XON CODE is sent to the host.

1. When turned ON LINE through the KEY.

2. When an error is released.

3. When the DATA inside the receiving buffer is 4KBytes or under.

Xoff (DC3; 13Hex)
In the following conditions, an XOFF CODE is send to the host.

1. When turned OFF LINE through the KEY.

2. When an error occurs.

3. When the empty area in the receiving buffer is 450 Bytes.

NOTE: When ROBUST-XON is ON

1. When turned ON LINE through the KEY.

2. When an error is released.

3. When the DATA inside the receiving buffer is 4KBytes or under.

In the above situations, an XON CODE is sent to the host every second.

C-2. DTR protocol

DTRon   In the following circumstances, DTR is to be LOW
(when DTR polarity is HI)
(When DTR polarity is LO, DTR is HIGH.)

1. When turned ON LINE through the KEY.

2. When an error is released.

3. When the DATA inside the receiving buffer is 4K-Bytes or under.

DTRoff   In the following circumstances, DTR is HIGH
(when DTR polarity is HI)
(When DTR polarity is LOW, DTR is LOW.)

1. When turned OFF LINE through the KEY.

2. When an error occurs.

3. When the empty area in the receiving buffer is 450 Bytes.

[14] CIRCUIT DIAGRAM

1. INTERLOCK CIRCUIT

JX-9460PS

2. POWER SUPPLY BOARD
2-1. CIRCUIT DIAGRAM (100V SERIES)
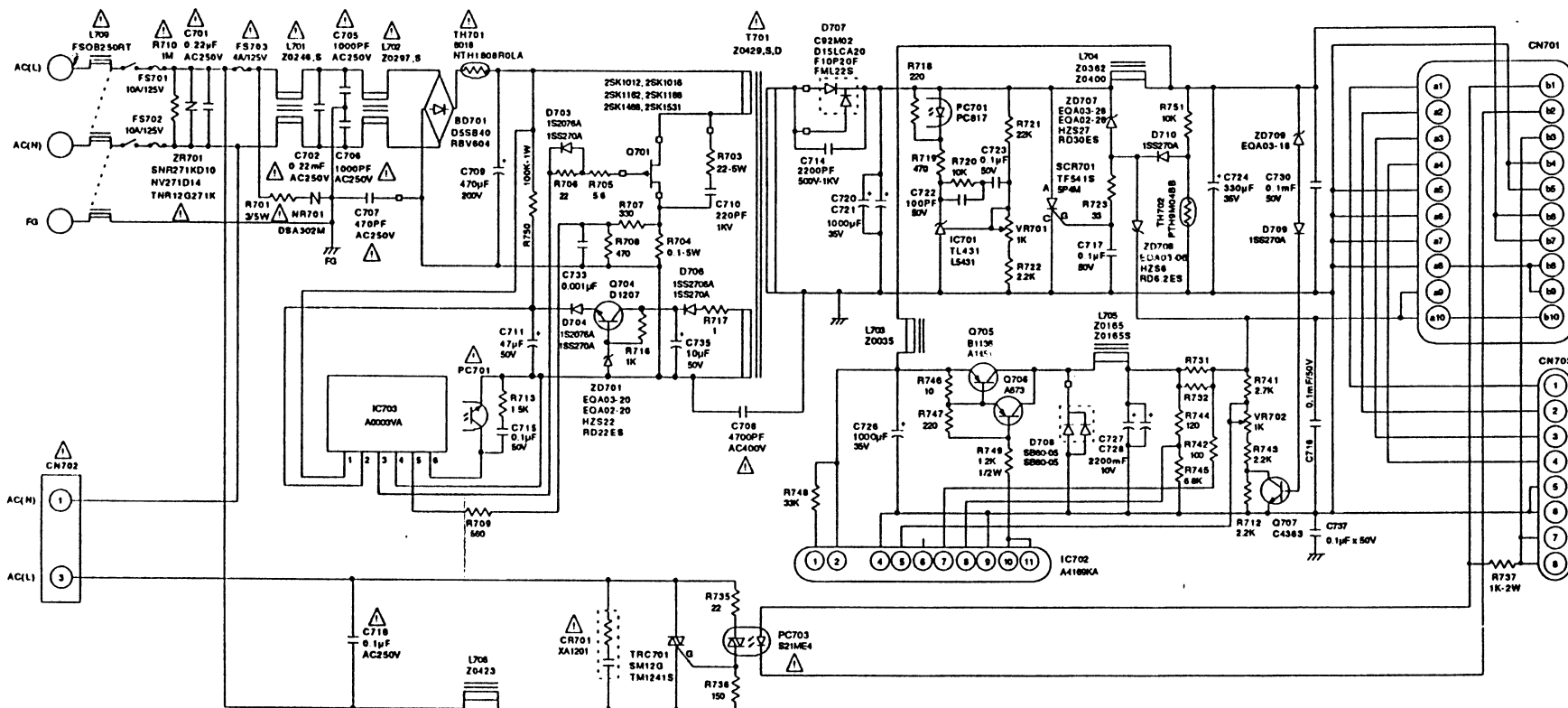
2-2. PARTS LAYOUT (100V SERIES)

JX-9460PS

– 115 –
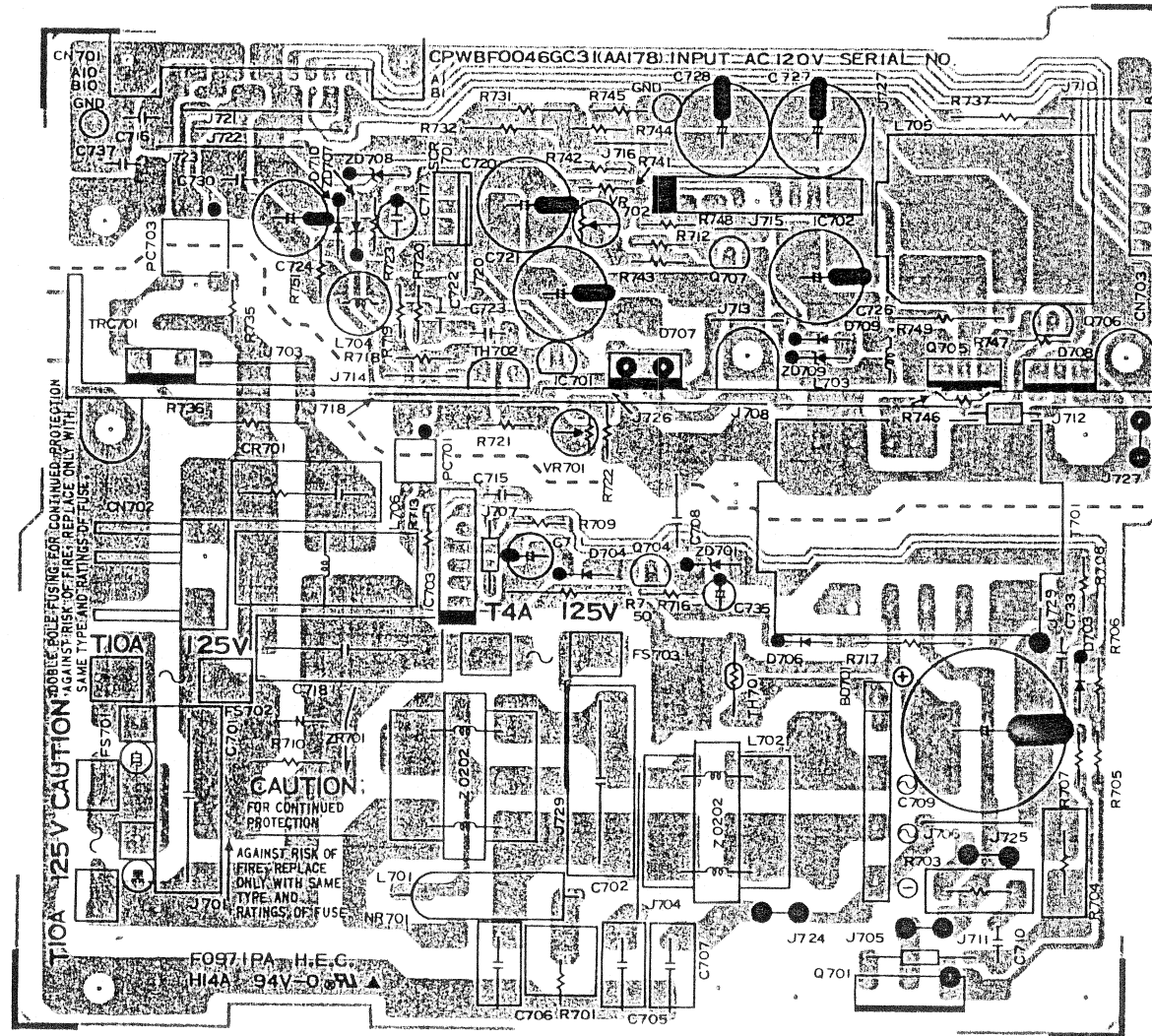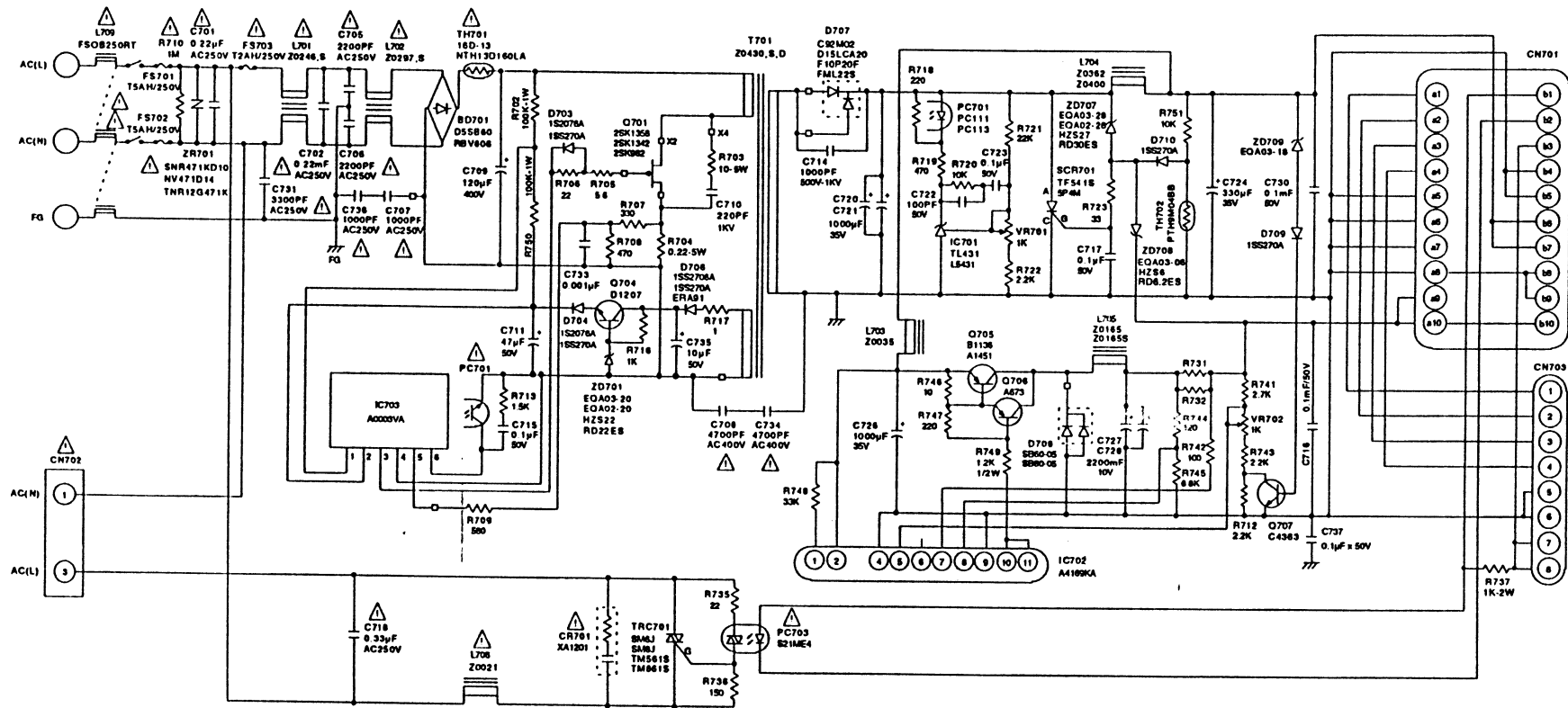
2-4. PARTS LAYOUT (200V SERIES)
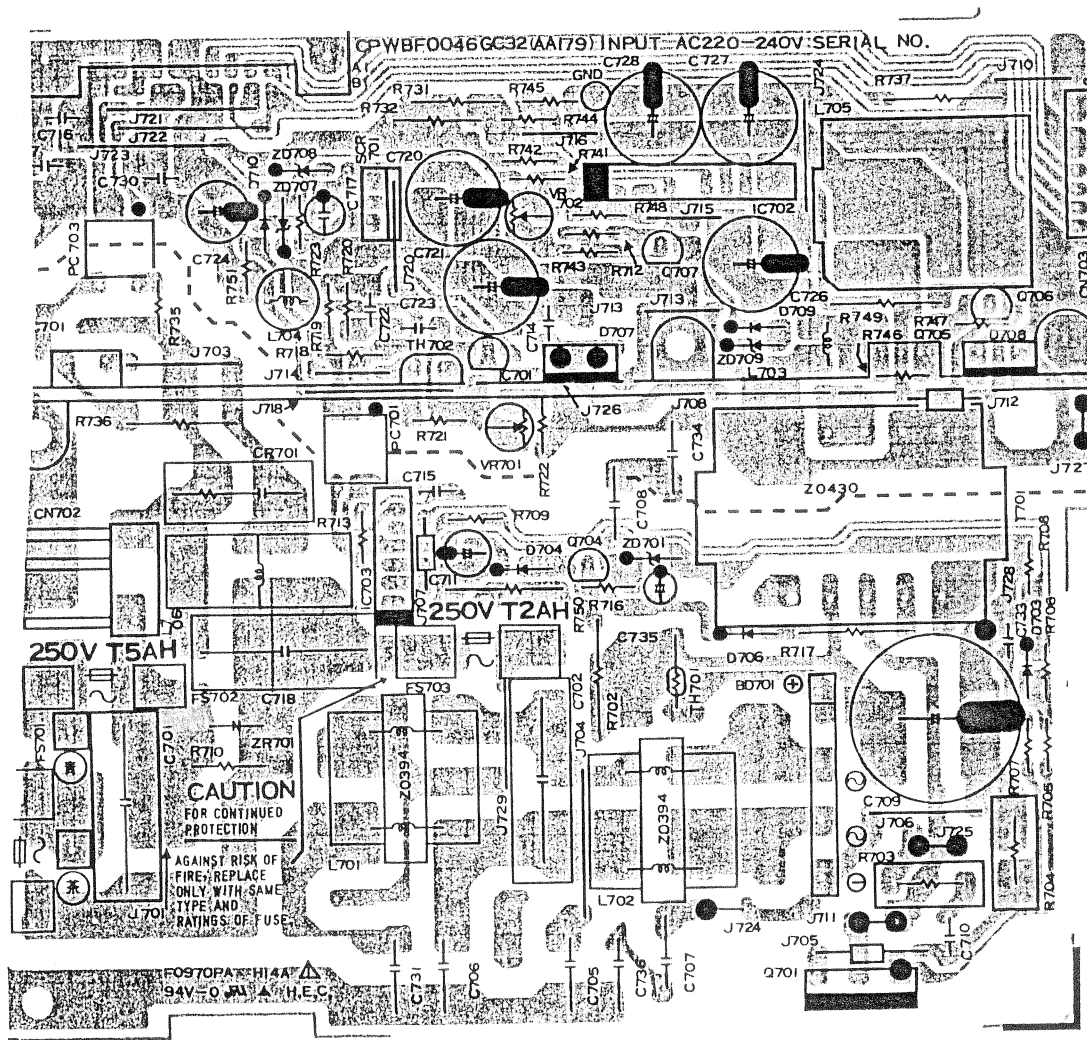
3. PCU BOARD
3-1. CIRCUIT DIAGRAM

3-2. PARTS LAYOUT

Top view

Bottom view

JX-9460PS
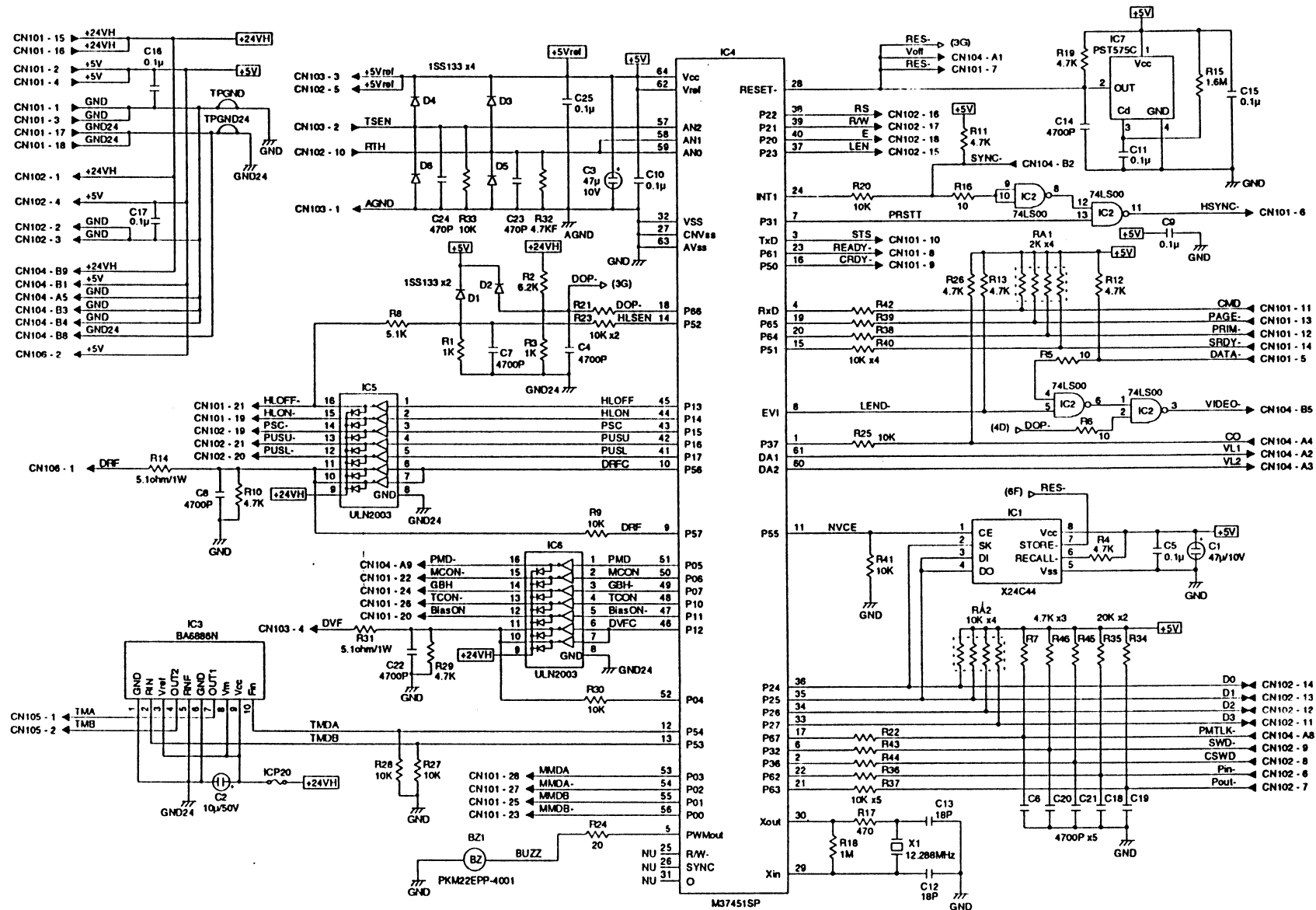
4. OPERATION BOARD
4-1. CIRCUIT DIAGRAM

PIN NO.	SYMBOL
1	LEN
2	SWD
3	E
4	R/W
5	VDD
6	S.GND
7	RS
8	D0
9	D1
10	D2
11	D3
12	Pout
13	S.GND
14	F.GND

IC3
VCC 16
CLOCK 7
G1 9
G2 10
GND 8
CLEAR 15
M 1
N 12
1D 14
2D 13
3D 12
4D 11
1Q 3
2Q 4
3Q 5
4Q 6

C5

R6 D1
R7 D2
R8 D3
R9 D4

VDD

IC2
VCC 16
GND 8
Y 5
W 6
A 11
B 10
C 9
STROBE 7
D0 4
D1 3
D2 2
D3 1
D4 15
D5 14
D6 13
D7 12

C4
NC

RC1
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8

RC2

VDD

IC1
E 38
R/W 37
VDD 33
VLC1 26
VLC2 27
VLC3 28
VLC4 29
VLC5 30
VSS 23
RS 36
DB4 43
DB5 44
DB6 45
DB7 46
DB0 39
DB1 40
DB2 41
DB3 42
COM16 62
COM9 55
COM1 47
COM8 54
SEG1 22
SEG2 1
SEG3 80
SEG40 63
OSC1 24
OSC2 25
LP 31
SCP 32
FR 34
D 35

NC 39
NC 40
NC 41
NC 42
NC 31
NC 32
NC 34
NC 35

R1
R2
R3
R4
J1
C1 C2 C3
R5
IC4
VDD
(C6)

LCD
(16 Charactorsxl line)
COM1
COM8
COM9
COM16
SEG1
SEG22
SEG23
SEG40
SEG41
SEG62
SEG63
SEG80

4-2. PARTS LAYOUT

5. CASSETTE SWITCH BOARD

5-1. CIRCUIT DIAGRAM
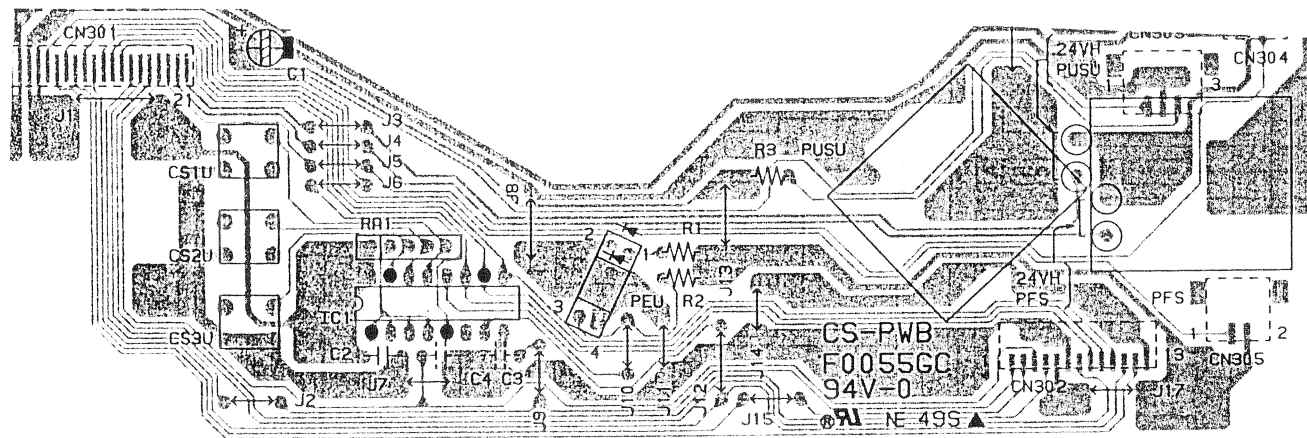
5-2. PARTS LAYOUT

6. MOTOR DRIVE BOARD

6-1. CIRCUIT DIAGRAM
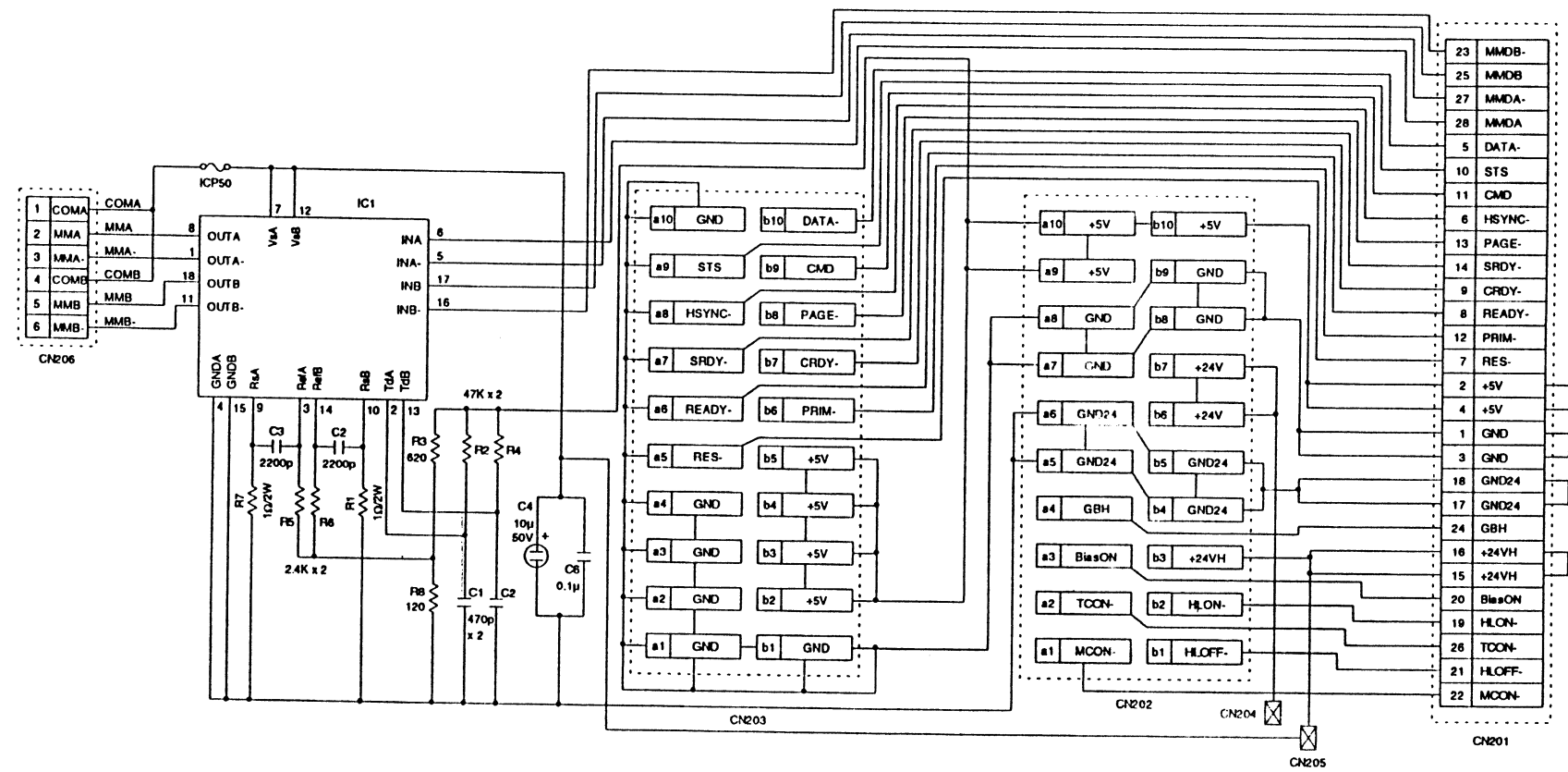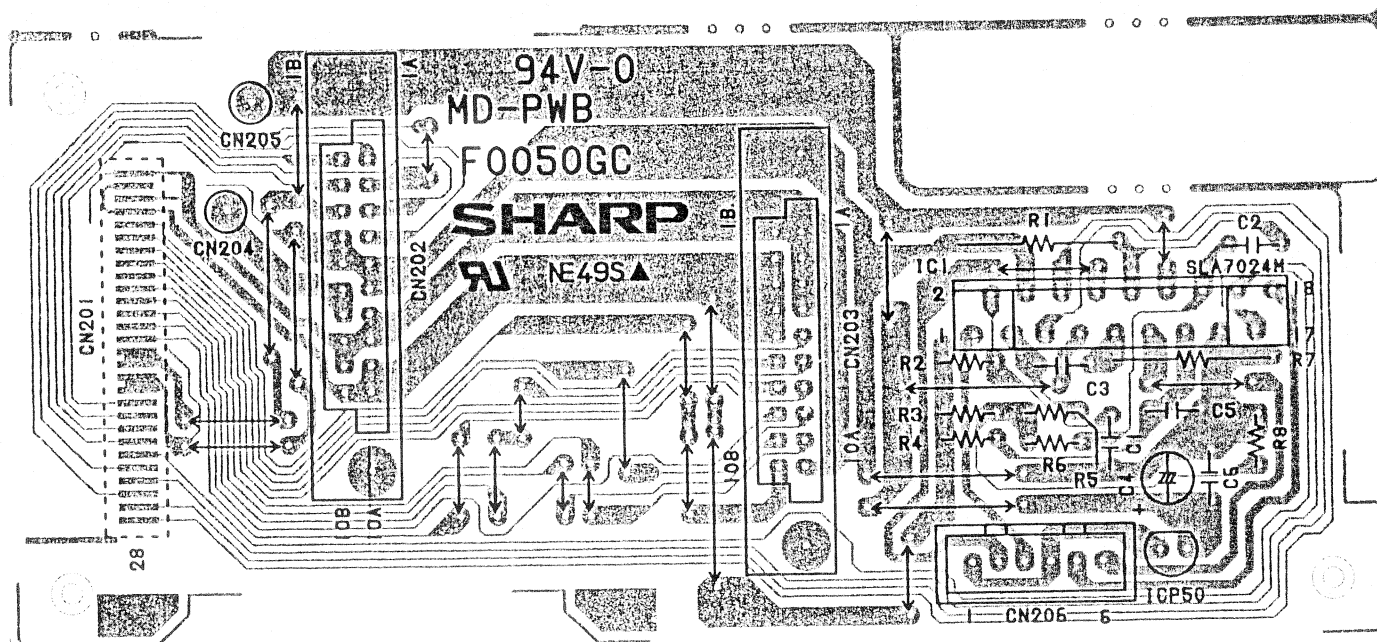
JX-9460PS

7. ICU BOARD
7-1. ICU CIRCUIT (CPU-SECTION)

7-2. ICU CIRCUIT (ROM ACCESS SECTION)
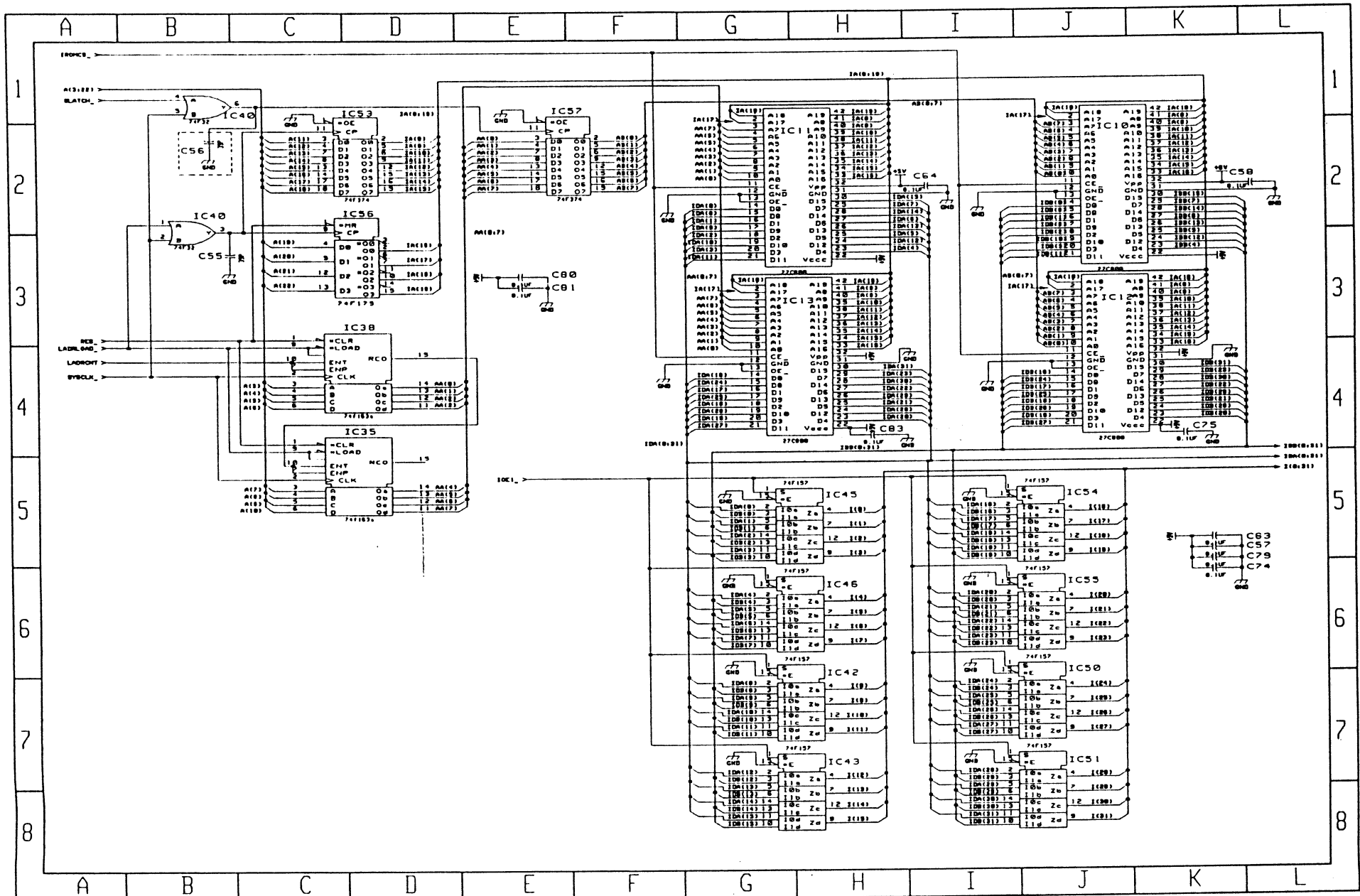
7-3. ICU CIRCUIT (DATA BUFFER SECTION)

	A	B	C	D	E	F	G	H	I	J	K	L

EXIOCS_ >

RD(0:31) >

I(0:31) >

RBUFOE >

R/W_ >

SBUFOE >

SBUFDIR >

D(0:31)

D(0:31)

IC39 74S04

IC41 Y 74F08

IC39 74S04

A 10K pull up PLACE NEAR F245

+5V
C17
C27
C38
C40
GND
0.1uF

IC33 74F245
*OE, T/*R (19, 1)

D(7) 2	A0	B0	18 I(7)	R88
D(6) 3	A1	B1	17 I(6)	R89
D(5) 4	A2	B2	16 I(5)	R90
D(4) 5	A3	B3	15 I(4)	R91
D(3) 6	A4	B4	14 I(3)	R92
D(2) 7	A5	B5	13 I(2)	R93
D(1) 8	A6	B6	12 I(1)	R94
D(0) 9	A7	B7	11 I(0)	R95

RA1

IC31 74F245
*OE, T/*R (19, 1)

R23, R29, R24, R30, R25, R31, R22, R32

D(8) 2	A0	B0	18 I(8)	R72
D(9) 3	A1	B1	17 I(9)	R73
D(10) 4	A2	B2	16 I(10)	R74
D(11) 5	A3	B3	15 I(11)	R75
D(12) 6	A4	B4	14 I(12)	R76
D(13) 7	A5	B5	13 I(13)	R77
D(14) 8	A6	B6	12 I(14)	R78
D(15) 9	A7	B7	11 I(15)	R79

IC32 74F245
*OE, T/*R (19, 1)

R26, R33, R27, R34, R28, R35, R36, R37

RA2

D(23) 2	A0	B0	18 I(23)
D(22) 3	A1	B1	17 I(22)
D(21) 4	A2	B2	16 I(21)
D(20) 5	A3	B3	15 I(20)
D(19) 6	A4	B4	14 I(19)
D(18) 7	A5	B5	13 I(18)
D(17) 8	A6	B6	12 I(17)
D(16) 9	A7	B7	11 I(16)

IC30 74F245
*OE, T/*R (19, 1)

R15, R14, R13, R12, R11, R10, R9, R8

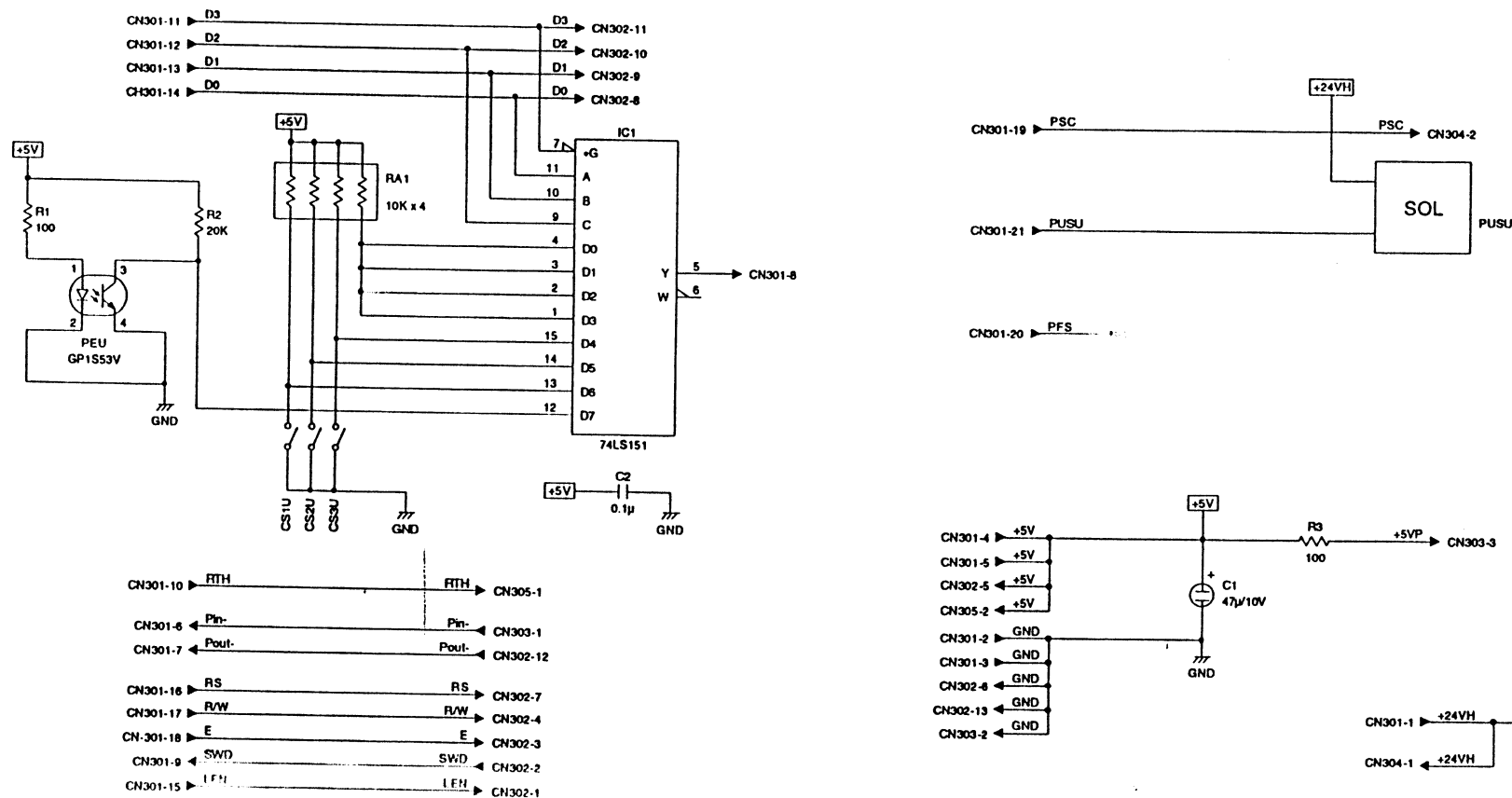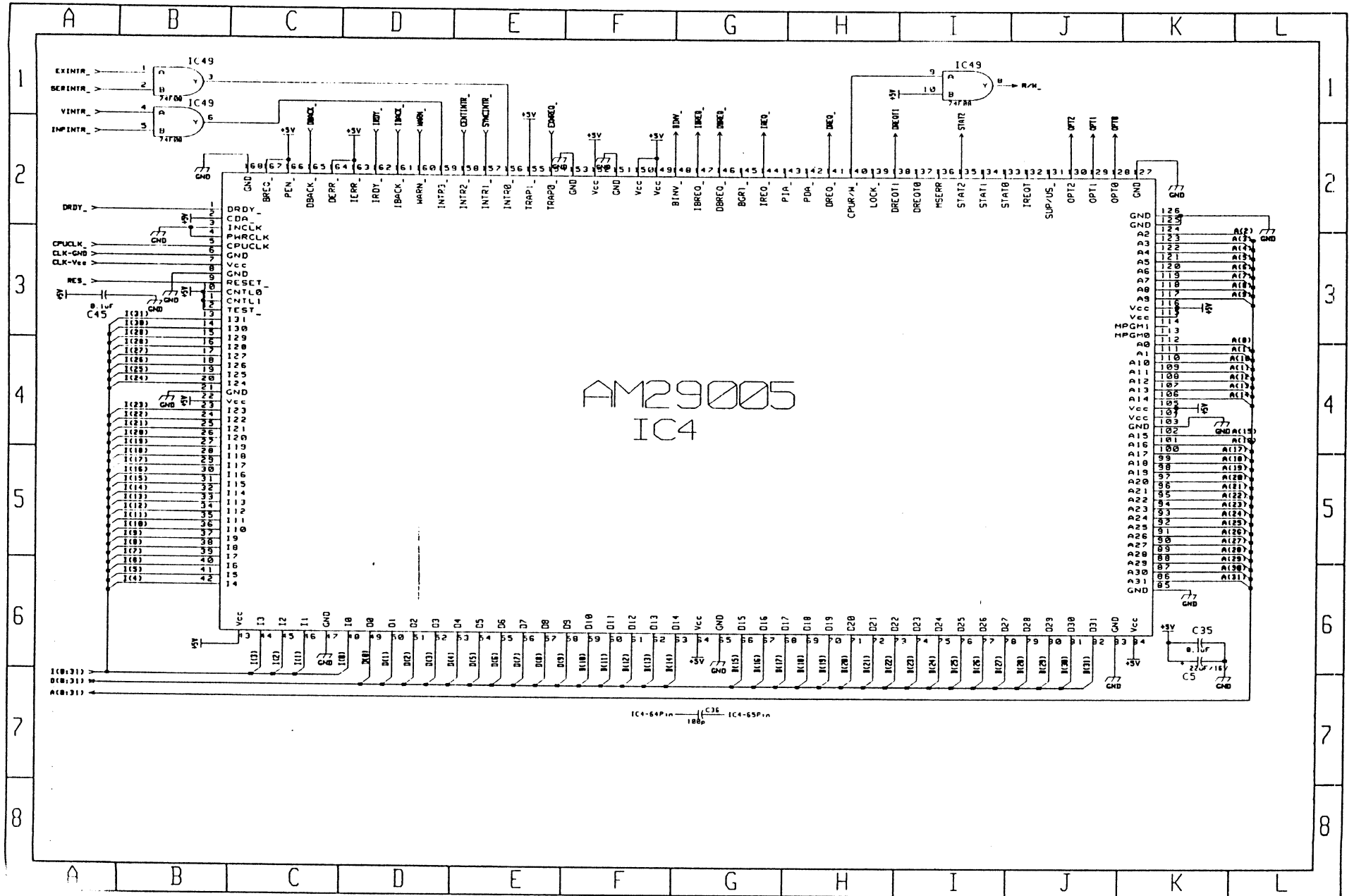| D(24) 2 | A0 | B0 | 18 I(24) | R66 |
D(25) 3	A1	B1	17 I(25)	R67
D(26) 4	A2	B2	16 I(26)	R68
D(27) 5	A3	B3	15 I(27)	R69
D(28) 6	A4	B4	14 I(28)	R70
D(29) 7	A5	B5	13 I(29)	R71
D(30) 8	A6	B6	12 I(30)	R118
D(31) 9	A7	B7	11 I(31)	R119

IC29 74F245
*OE, T/*R (19, 1)

RD(0) 2	A0	B0	18 D(0)
RD(1) 3	A1	B1	17 D(1)
RD(2) 4	A2	B2	16 D(2)
RD(3) 5	A3	B3	15 D(3)
RD(4) 6	A4	B4	14 D(4)
RD(5) 7	A5	B5	13 D(5)
RD(6) 8	A6	B6	12 D(6)
RD(7) 9	A7	B7	11 D(7)

IC19 74F245
*OE, T/*R (19, 1)

RD(8) 2	A0	B0	18 D(8)
RD(9) 3	A1	B1	17 D(9)
RD(10) 4	A2	B2	16 D(10)
RD(11) 5	A3	B3	15 D(11)
RD(12) 6	A4	B4	14 D(12)
RD(13) 7	A5	B5	13 D(13)
RD(14) 8	A6	B6	12 D(14)
RD(15) 9	A7	B7	11 D(15)

IC28 74F245
*OE, T/*R (19, 1)

RD(16) 2	A0	B0	18 D(16)
RD(17) 3	A1	B1	17 D(17)
RD(18) 4	A2	B2	16 D(18)
RD(19) 5	A3	B3	15 D(19)
RD(20) 6	A4	B4	14 D(20)
RD(21) 7	A5	B5	13 D(21)
RD(22) 8	A6	B6	12 D(22)
RD(23) 9	A7	B7	11 D(23)

IC20 74F245
*OE, T/*R (19, 1)

RD(24) 2	A0	B0	18 D(24)
RD(25) 3	A1	B1	17 D(25)
RD(26) 4	A2	B2	16 D(26)
RD(27) 5	A3	B3	15 D(27)
RD(28) 6	A4	B4	14 D(28)
RD(29) 7	A5	B5	13 D(29)
RD(30) 8	A6	B6	12 D(30)
RD(31) 9	A7	B7	11 D(31)

7-4. ICU CIRCUIT (DRAM ACCESS SECTION)
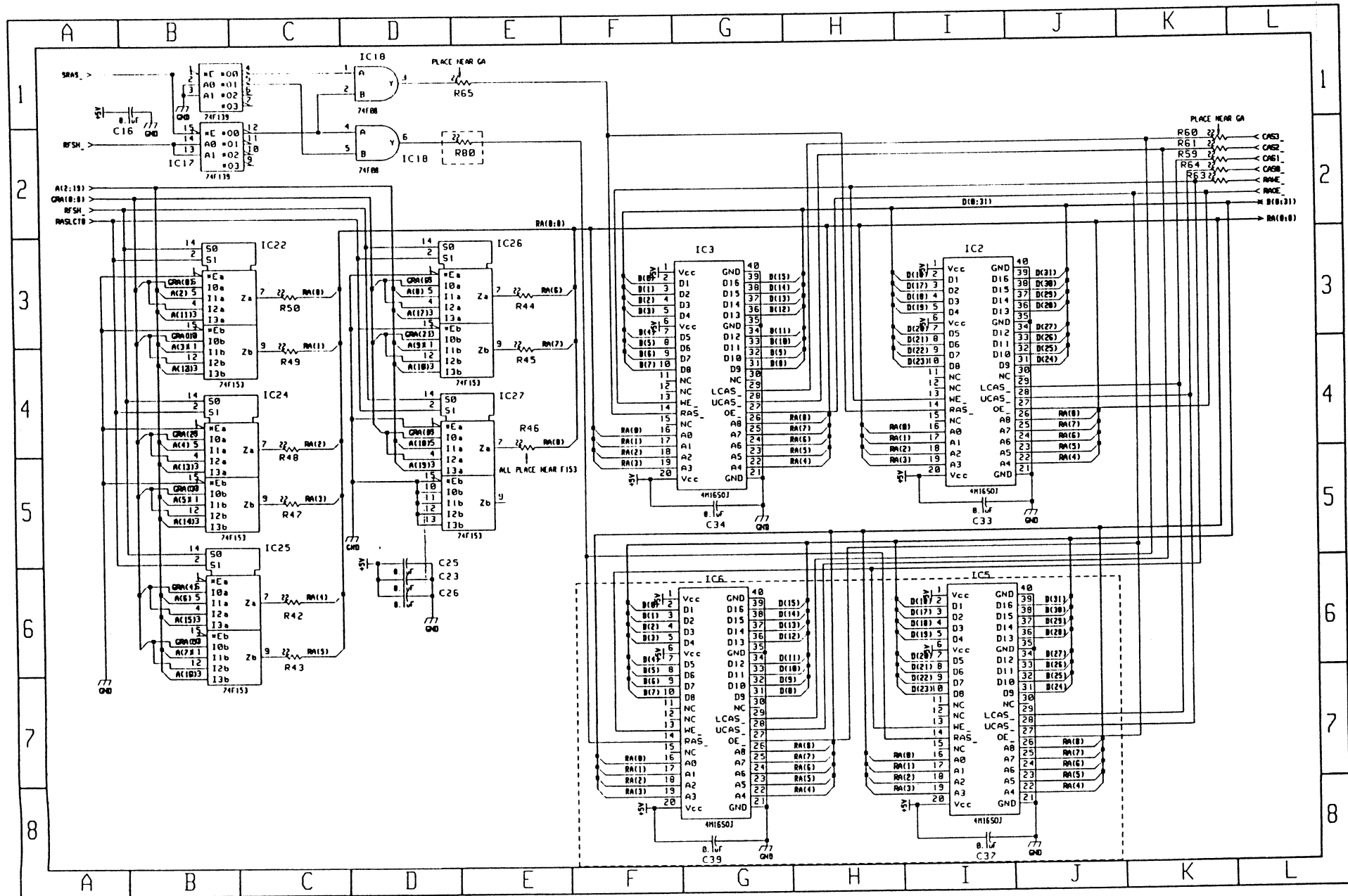
JX-9460PS

7-6. ICU CIRCUIT (FIFO ACCESS SECTION)
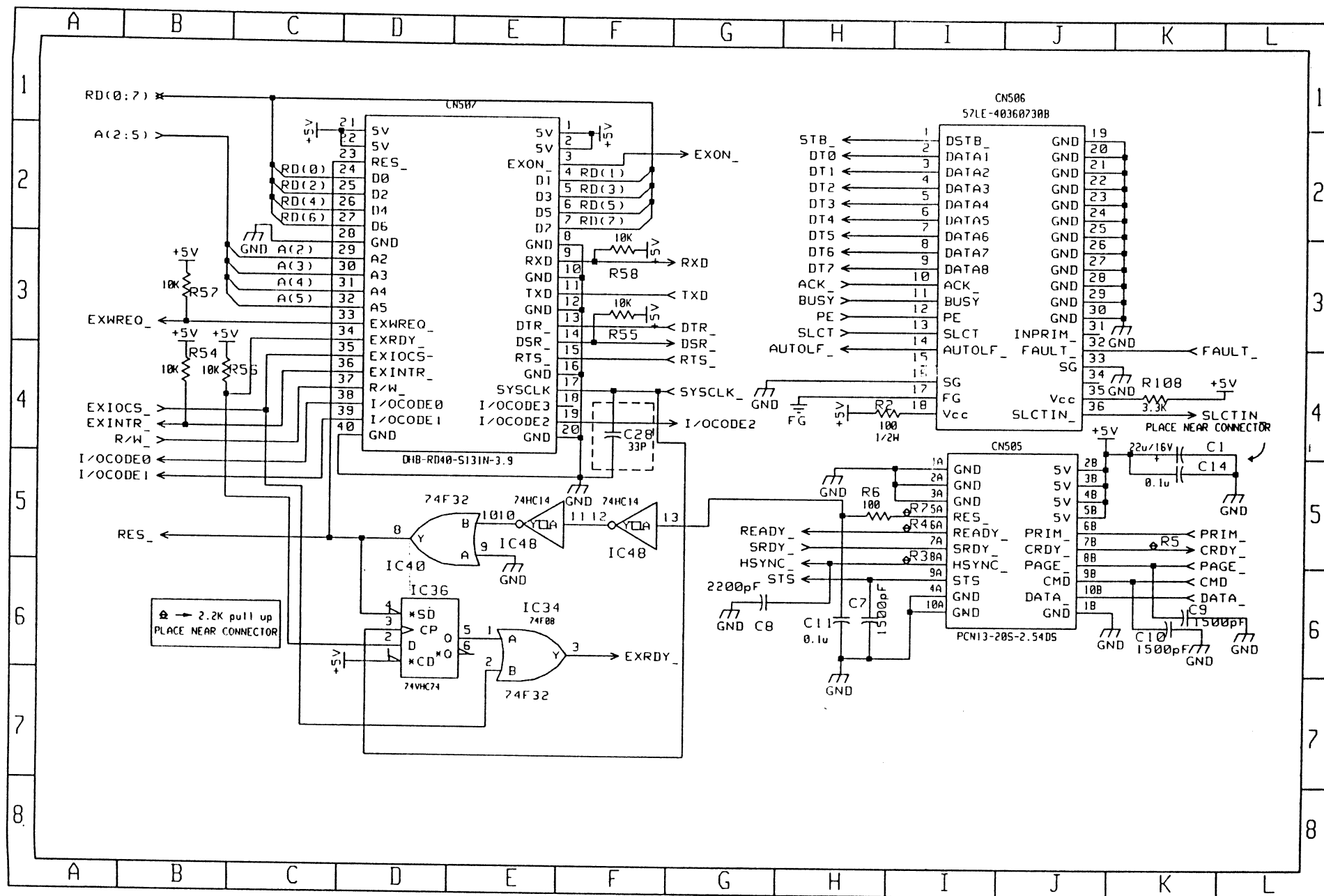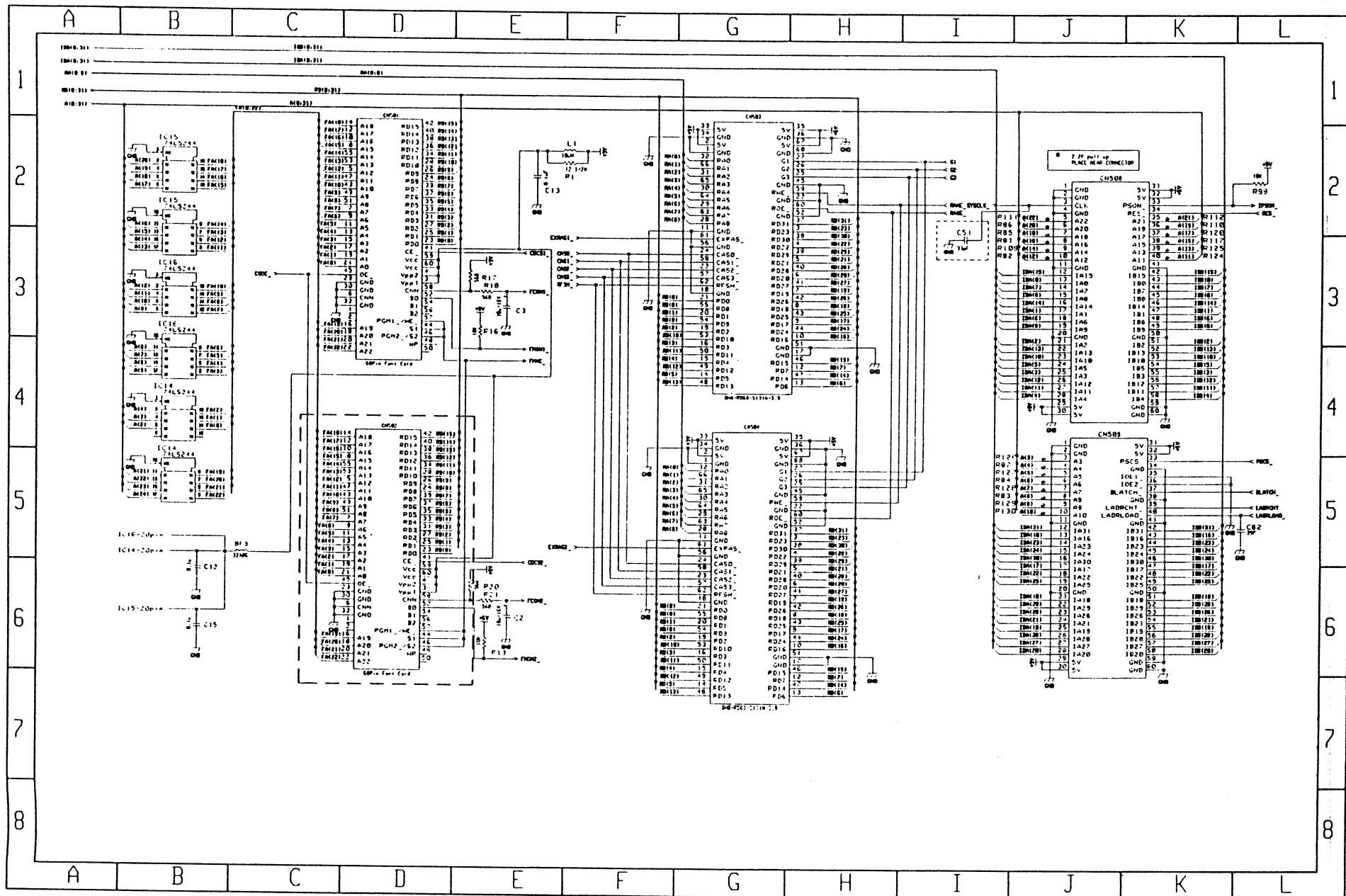
JX-9460PS

7-9. ICU CIRCUIT (HRT CIRCUIT SECTION)
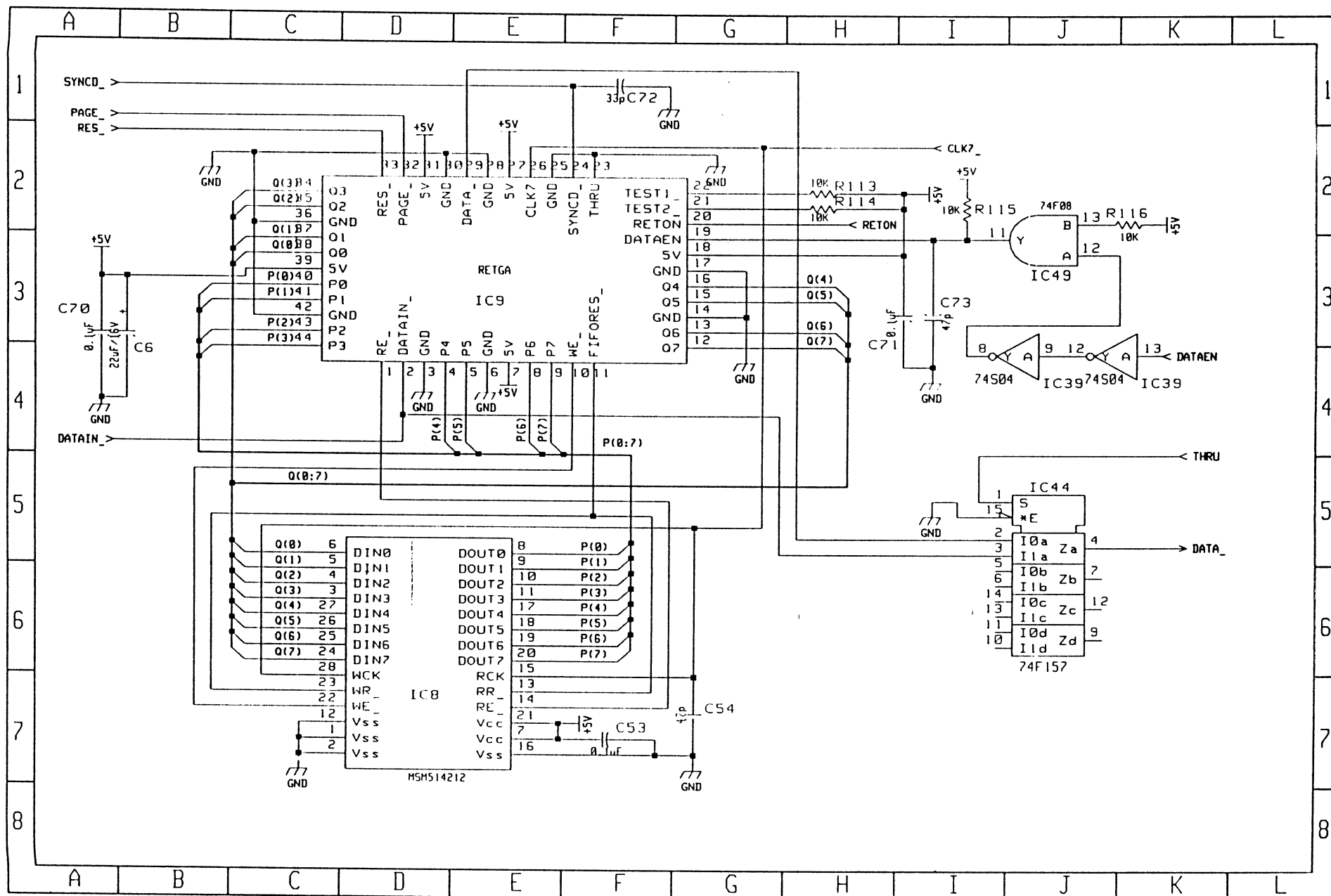
7-2. PARTS LAYOUT

(Top view)
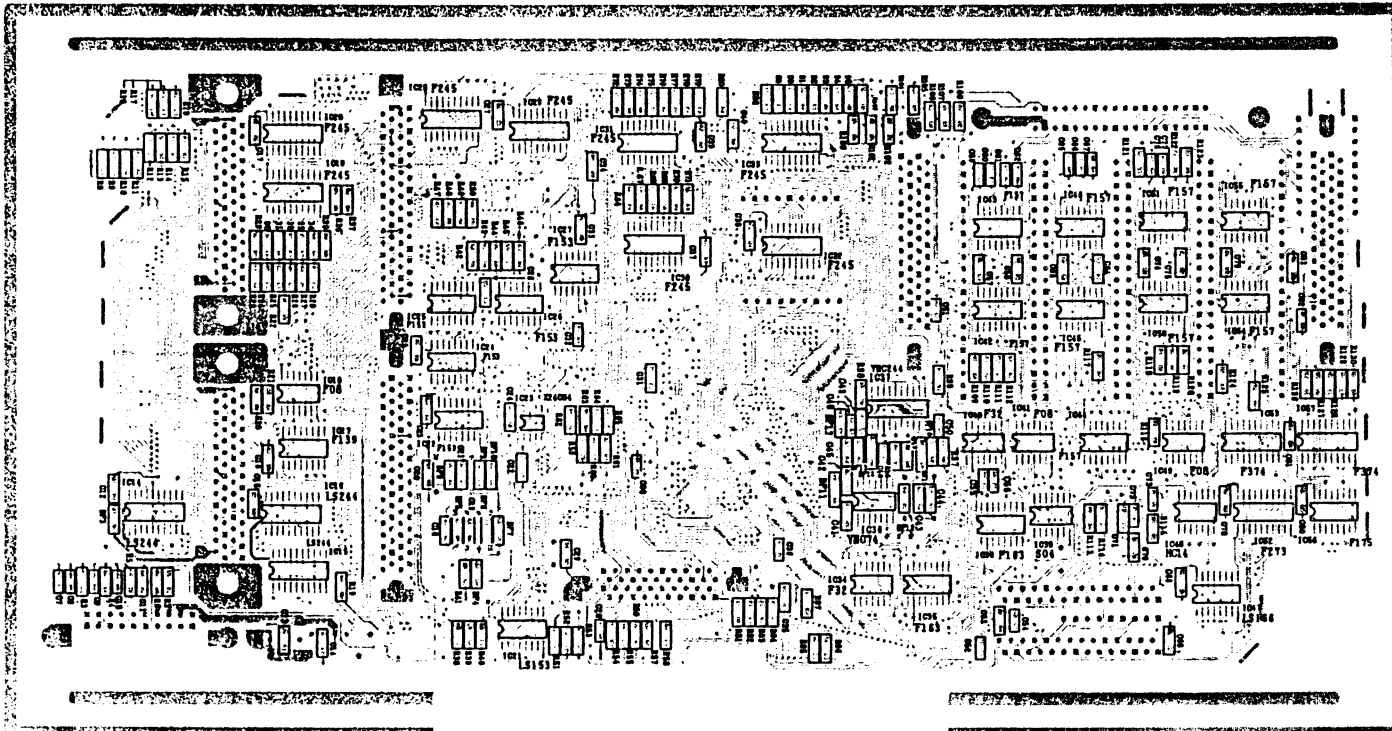
9. CONNECTOR SIGNAL NAME

(1) PCU connector pin assignment

CN101

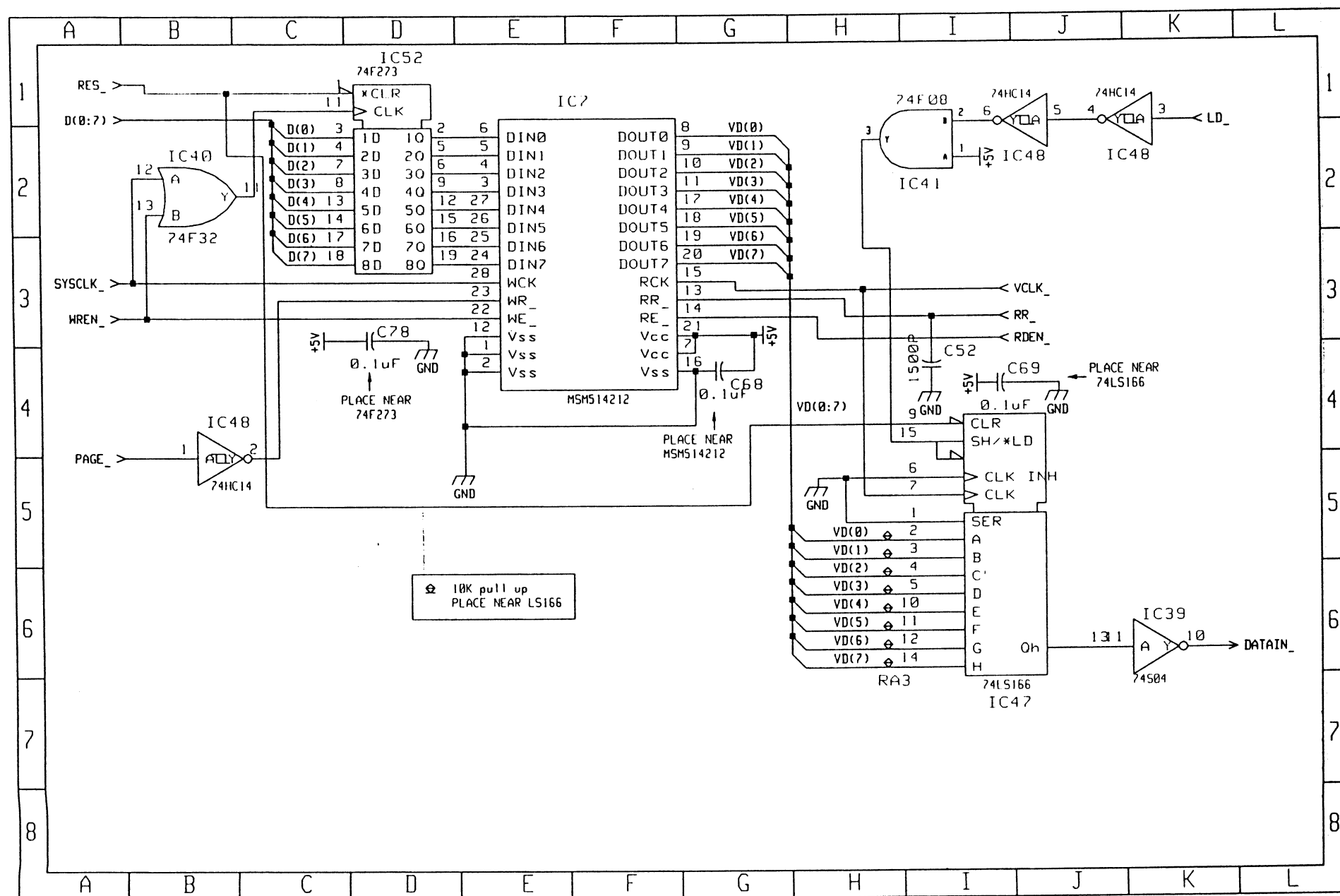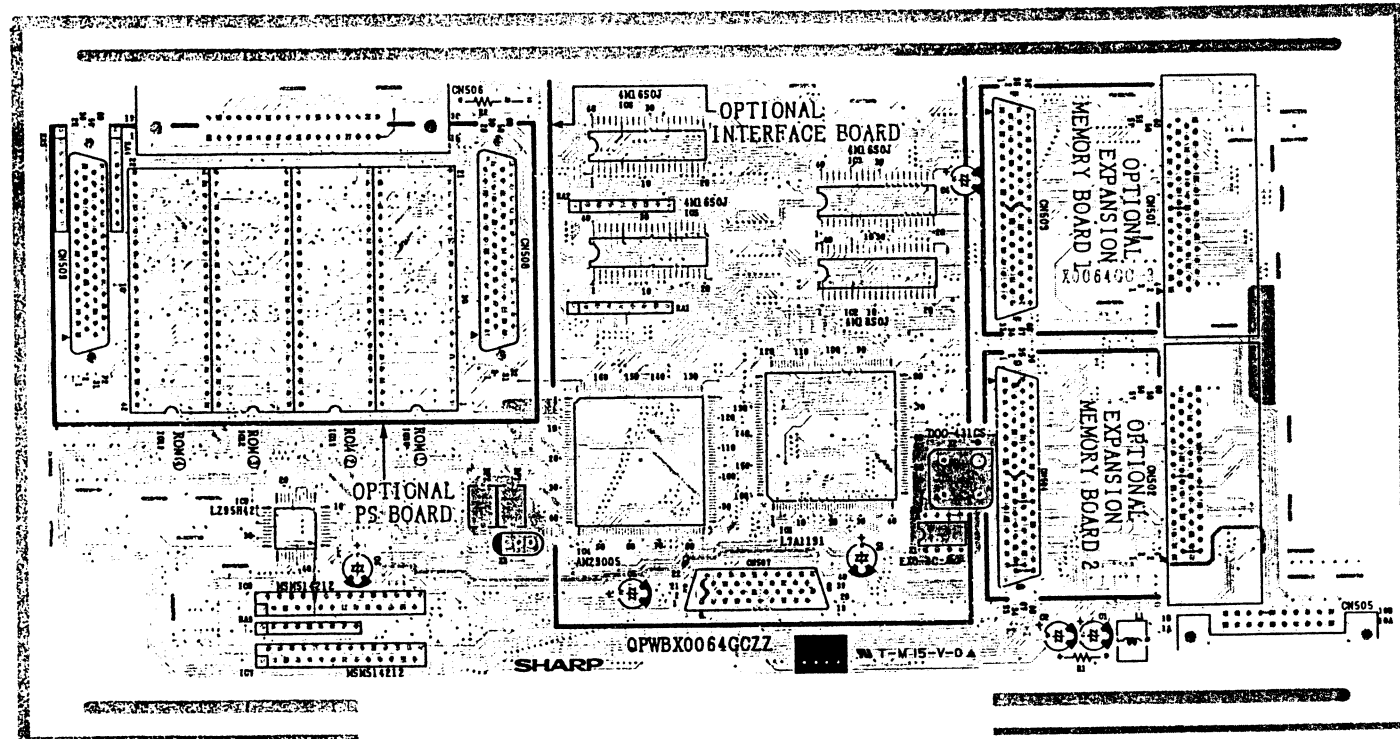| PIN	NAME
	PCU-MD
1	GND
2	+5V
3	GND
4	+5V
5	DATA
6	HSYNC
7	RES
8	READY
9	CRDY
10	STS
11	CMD
12	PRIM
13	PAGE
14	SRDY
15	+24VH
16	+24VH
17	GND24
18	GND24
19	HLON
20	BiasON
21	HLOFF
22	MCON
23	MMDB
24	GBH
25	MMDB
26	TCON
27	MMDA
28	MMDA

CN102

PIN	NAME
	PCU-CS
1	+24VH
2	GND
3	GND
4	+5V
5	+5Vref
6	Pin
7	Pout
8	CSWD
9	SWD
10	RTH
11	D3
12	D2
13	D1
14	D0
15	LEN
16	RS
17	R/W
18	E
19	PSC
20	PUSL
21	PUSU

CN103

PIN	NAME
	PCU-TS
1	AGND
2	TSEN
3	+5Vref
4	DVF

CN104

PIN	NAME	PIN	NAME
	PCU-LSU		
A1	Voff	B1	+5V
A2	VL1	B2	SYNC
A3	VL2	B3	GND
A4	CO	B4	GND
A5	GND	B5	VIDEO
A6	NC	B6	NC
A7	NC	B7	NC
A8	PMTLK	B8	GND24
A9	PMD	B9	+24VH
A10	NC	B10	NC

CN105

PIN	NAME
	PCU-T. MOTOR
1	TMA
2	TMB

CN106

PIN	NAME
	PCU-DR. SENSOR
1	DRF
2	+5V

(2) MD-PWB connector pin assignment

CN201

PIN	NAME
	MD-PCU
1	GND
2	+5V
3	GND
4	+5V
5	DATA
6	HSYNC
7	RES
8	READY
9	DRDY
10	STS
11	CMD
12	PRIM
13	PAGE
14	SRDY
15	+24VH
16	+24VH
17	GND24
18	GND24
19	HLON
20	BiasON
21	HLOFF
22	MCON
23	MMDB
24	GBH
25	MMDB
26	TCON
27	MMDA
28	MMDA

CN204

PIN	NAME
	MD-DSW
1	+24VH

CN205

PIN	NAME
	MD-DSW
1	+24V

CN202

PIN	NAME	PIN	NAME
	MD-PS		
1A	MCON	1B	HLOFF
2A	TCON	2B	HLON
3A	BiasON	3B	+24VH
4A	GBH	4B	GND24
5A	GND24	5B	GND24
6A	GND24	6B	+24V
7A	GND	7B	+24V
8A	GND	8B	GND
9A	+5V	9B	GND
10A	+5V	10B	+5V

CN203

PIN	NAME	PIN	NAME
	MD-ICU		
1A	GND	1B	GND
2A	GND	2B	+5V
3A	GND	3B	+5V
4A	GND	4B	+5V
5A	RES	5B	+5V
6A	READY	6B	PRIM
7A	SRDY	7B	CRDY
8A	HSYNC	8B	PAGE
9A	STS	9B	CMD
10A	GND	10B	DATA

CN206

PIN	NAME
	MD-MM
1	COMA
2	MMA
3	MMA
4	COMB
5	MMB
6	MMB

(3) CS-PWB connector pin assignment

CN301

PIN	NAME
	CS-PCU
1	+24VH
2	GND
3	GND
4	+5V
5	+5Vref
6	Pin
7	Pout
8	CSWD
9	SWD
10	RTH
11	D3
12	D2
13	D1
14	D0
15	LEN
16	RS
17	R/W
18	E
19	PSC
20	PUSL
21	PUSU

CN302

PIN	NAME
	CS-OPU
1	LEN
2	SWD
3	E
4	R/W
5	+5V
6	GND
7	RS
8	D0
9	D1
10	D2
11	D3
12	Pout
13	GND

CN303

PIN	NAME
	CS-Pin
1	Pin
2	GND
3	+5VP

CN304

PIN	NAME
	CS-PSC
1	+24VH
2	PSC

CN305

PIN	NAME
	CS-RTH
1	RTH
2	+5Vref

8. WIRING DIAGRAM

Cassette unit

OPU harness (FFC)

CN302

CN401 OPU
Pout

CN303

CS-PWB

CN304

CN305 RTH
HL

CN301

Transport unit

DV unit

CS harness (FFC)

TS harness (FFC)

TSEN

PIN

PSC

PPU harness (FFC)

Drum unit

CA. sensor

CN102

CN103

CN106

DR harness

DSW

CN204

CN201

CN101

CN205

PCU

MD-PWB

CN104 LD BD
PM

CN501 LSD

CN105 T.M.

CN702

CN901

CN202 CN701 PS CN703

M.M.

CN206

HVU

CN203 ICU

Main fream
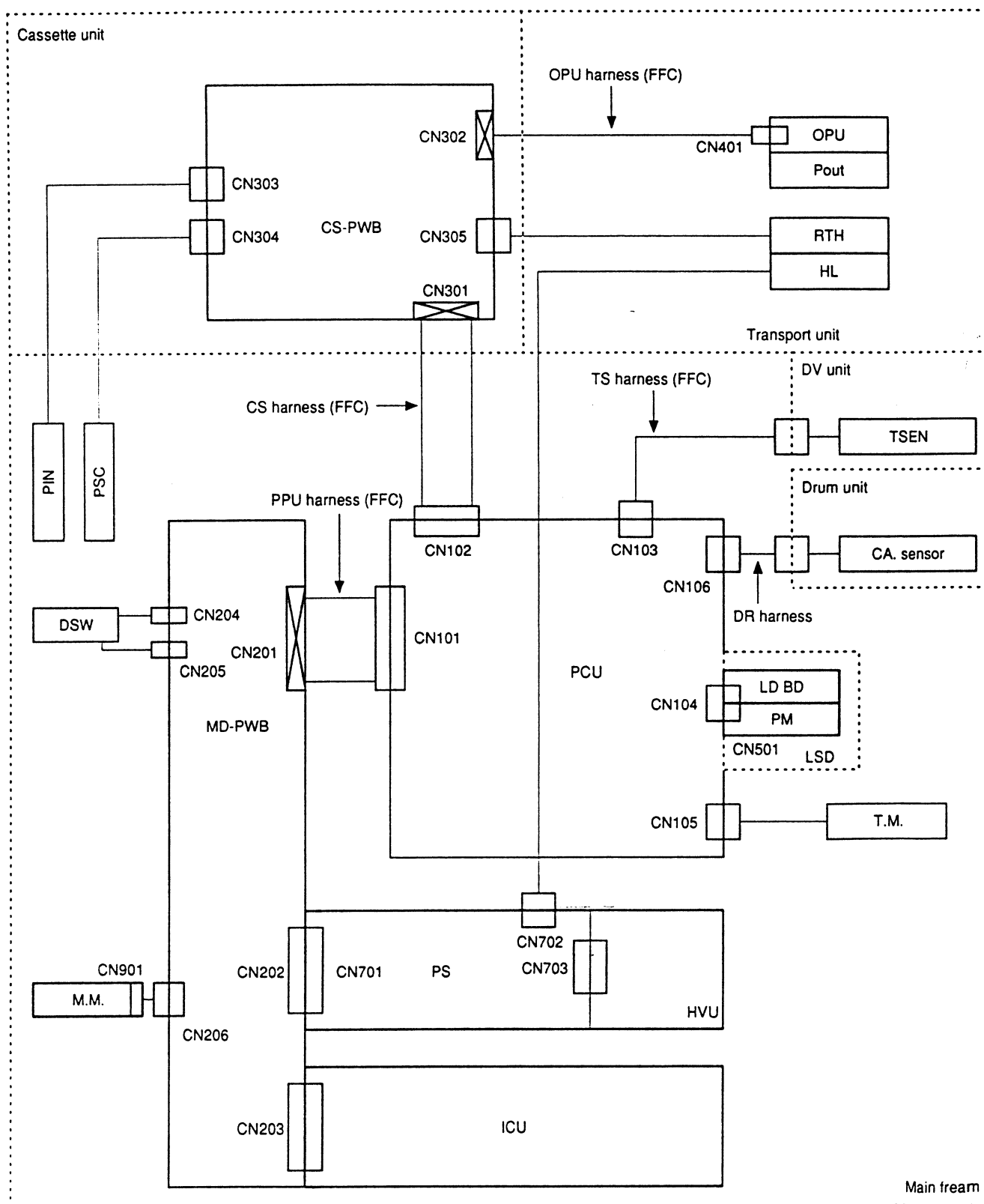
10. P.S CIRCUIT

10-1. Circuit diagram

JX-9460PS
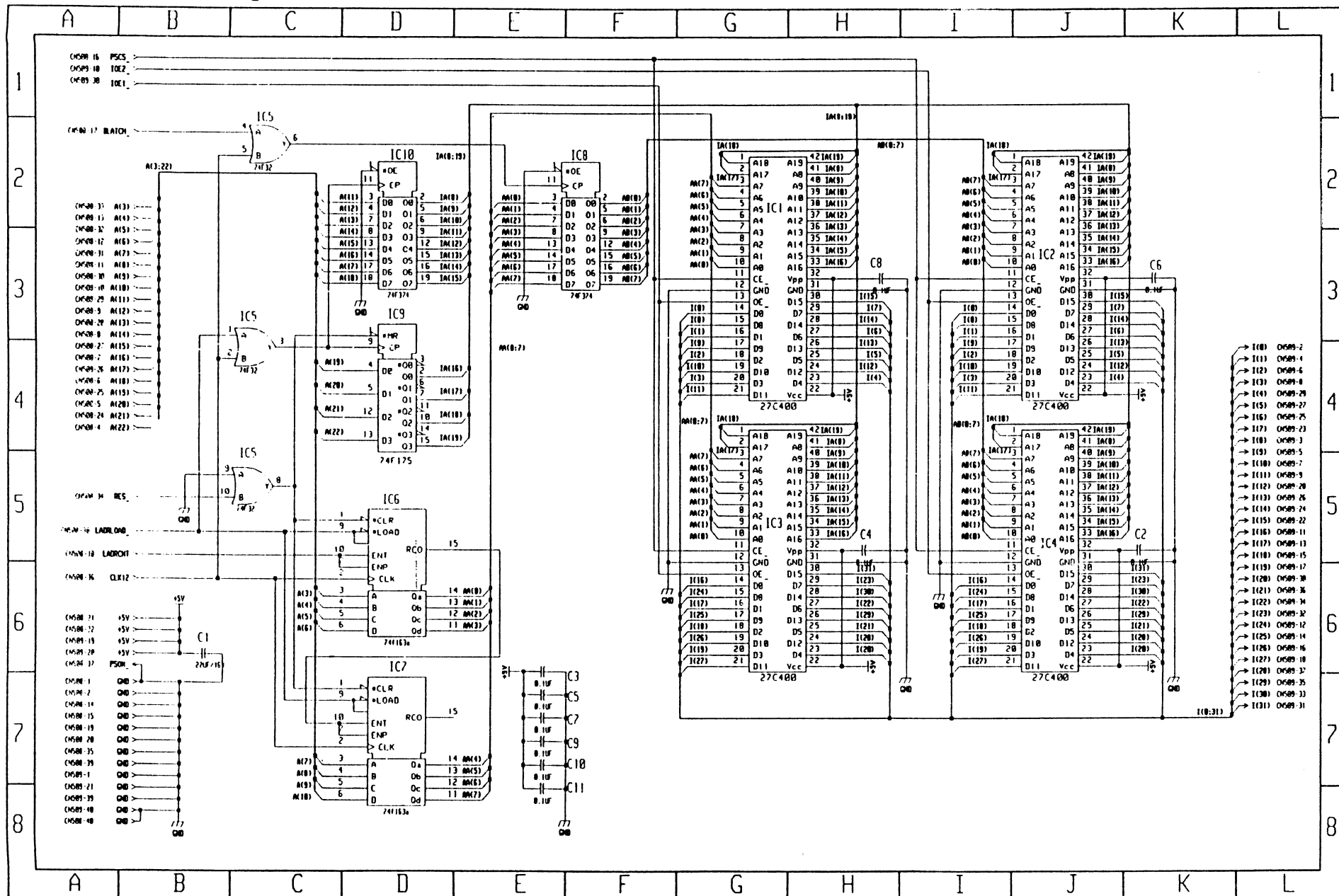
(4) Operation PWB connector pin assignment

CN401

PIN	NAME
	OPU·CS
PIN	NAME
1	LEN
2	SWD
3	E
4	R/W
5	+5V
6	GND
7	RS
8	D0
9	D1
10	D2
11	D3
12	$\overline{Pout}$
13	GND
14	NC

(5) Laser scanner unit connector pin assignment

CN501

PIN	NAME	PIN	NAME
	LSU·PCU		
A1	Voff	B1	+5V
A2	VL1	B2	$\overline{SYNC}$
A3	VL2	B3	GND
A4	CO	B4	GND
A5	GND	B5	$\overline{VIDEO}$
A6	NC	B6	NC
A7	NC	B7	NC
A8	$\overline{PMTLK}$	B8	GND24
A9	$\overline{PMD}$	B9	+24VH
A10	NC	B10	NC

(6) Power supply PWB connector pin assignment

CN701

PIN	NAME	PIN	NAME
	PS·MD		
1A	$\overline{MCON}$	1B	$\overline{HLOFF}$
2A	TCON	2B	$\overline{HLON}$
3A	BiasON	3B	+24VH
4A	GBH	4B	GND24
5A	GND24	5B	GND24
6A	GND24	6B	+24V
7A	GND	7B	+24V
8A	GND	8B	GND
9A	+5V	9B	GND
10A	+5V	10B	+5V

CN702

PIN	NAME
	PS·FUSER
1	HLN
2	NC
3	NC
4	HLL

CN703

PIN	NAME
	PS·HVU
1	$\overline{MCON}$
2	$\overline{TCON}$
3	BiasON
4	GBH
5	GND24
6	GND24
7	+24VH
8	+24VH

(7) Main motor connector pin assignment

CN901

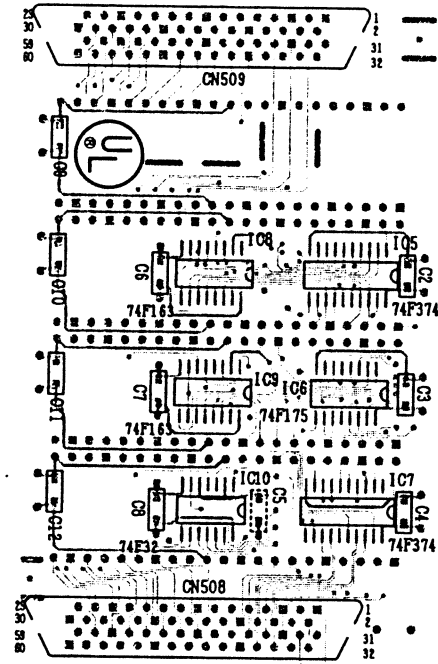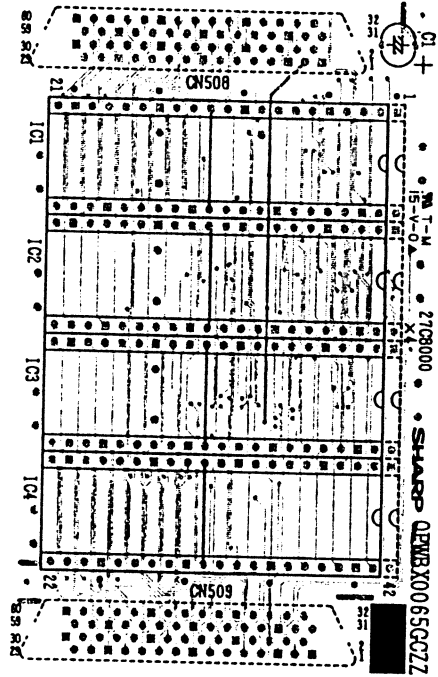| PIN	NAME
	MM·MD
1	MMA
2	NCD
3	COMA
4	NC
5	$\overline{MMA}$
6	NC
7	MMB
8	NC
9	COMB
10	NC
11	$\overline{MMB}$

(8) Drum connect PWB pin assignment
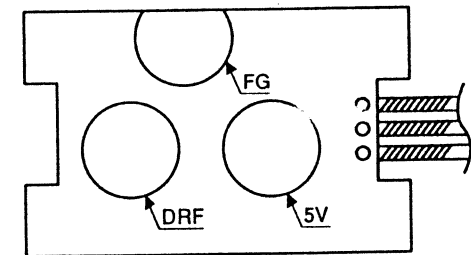
(9) Toner sensor PWB pin assignment

10-2. PARTS LAYOUT
P.S P.W.B

11. EXPANSION MEMORY BOARD
11-1. CIRCUIT DIAGRAM
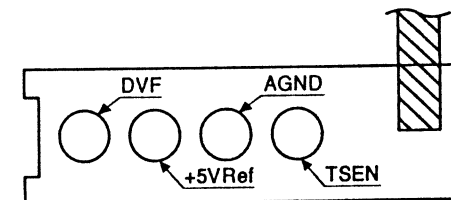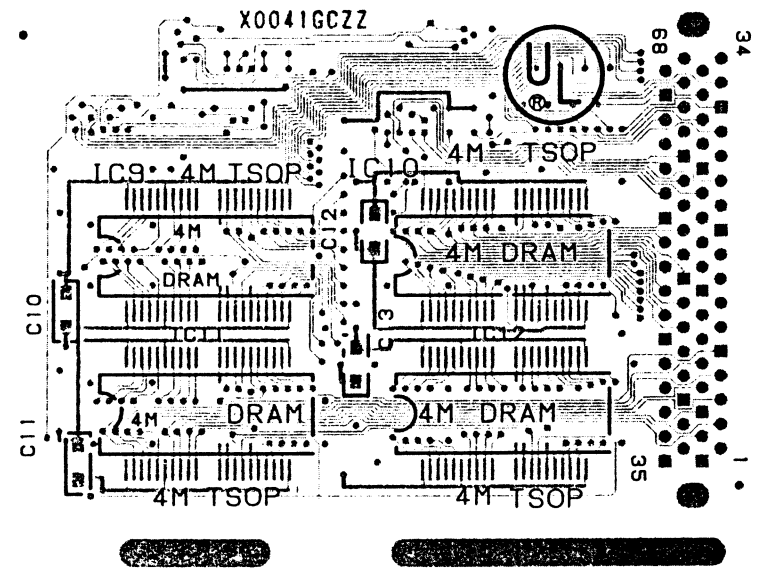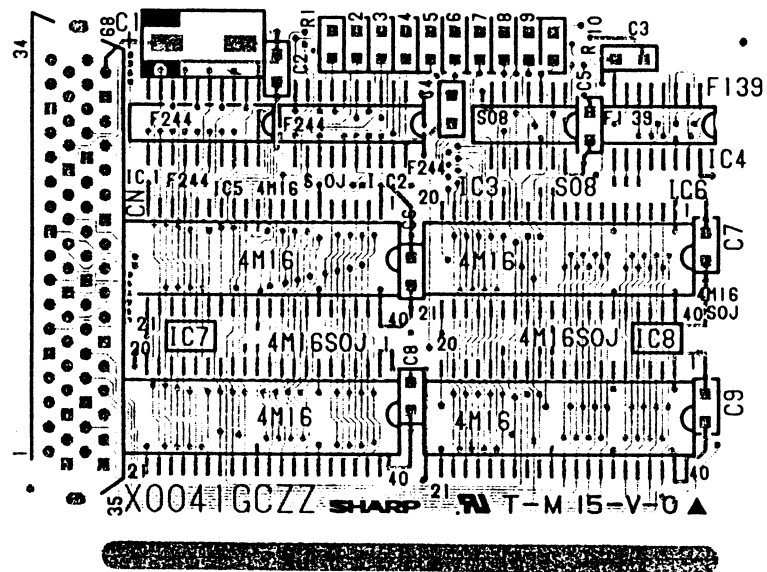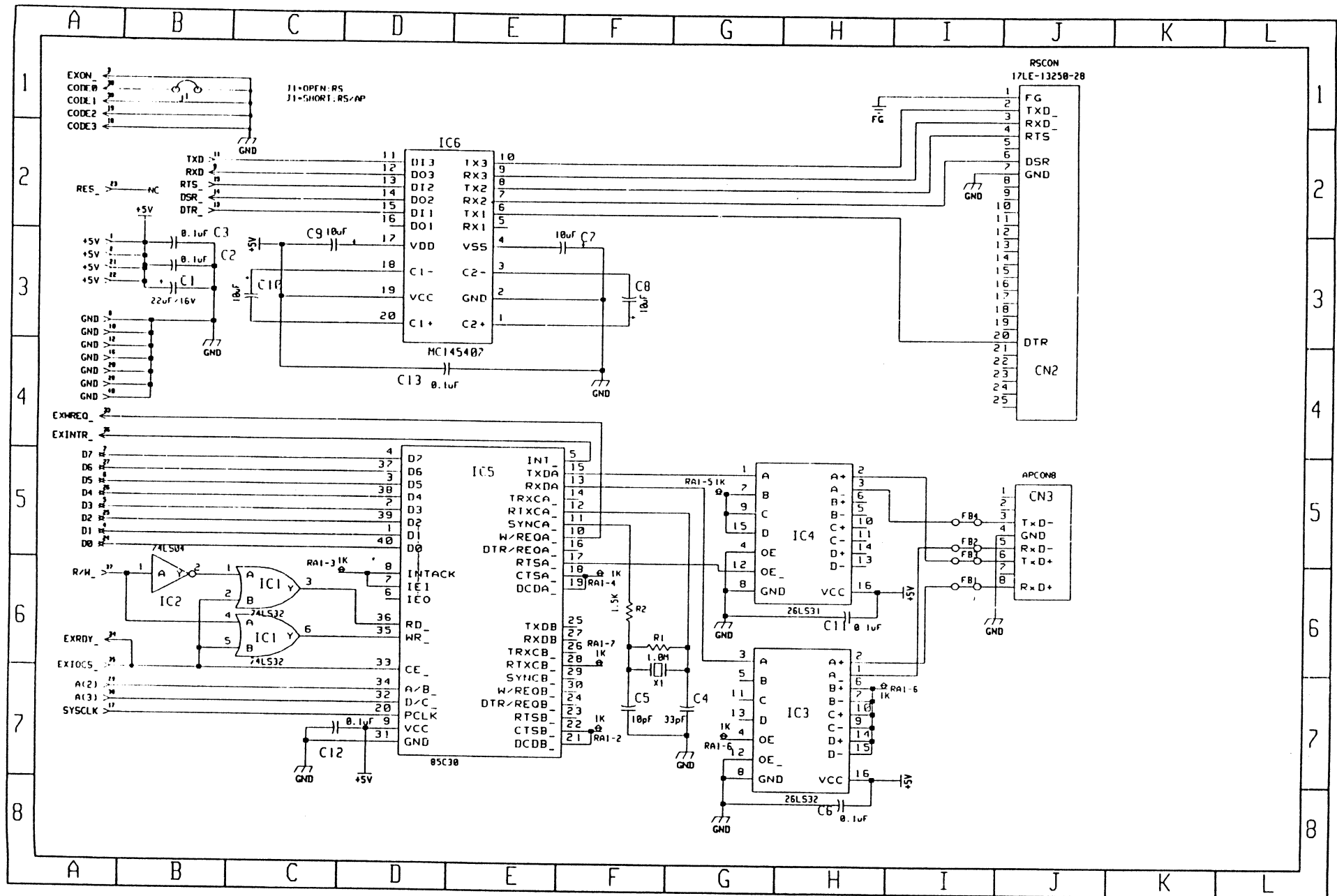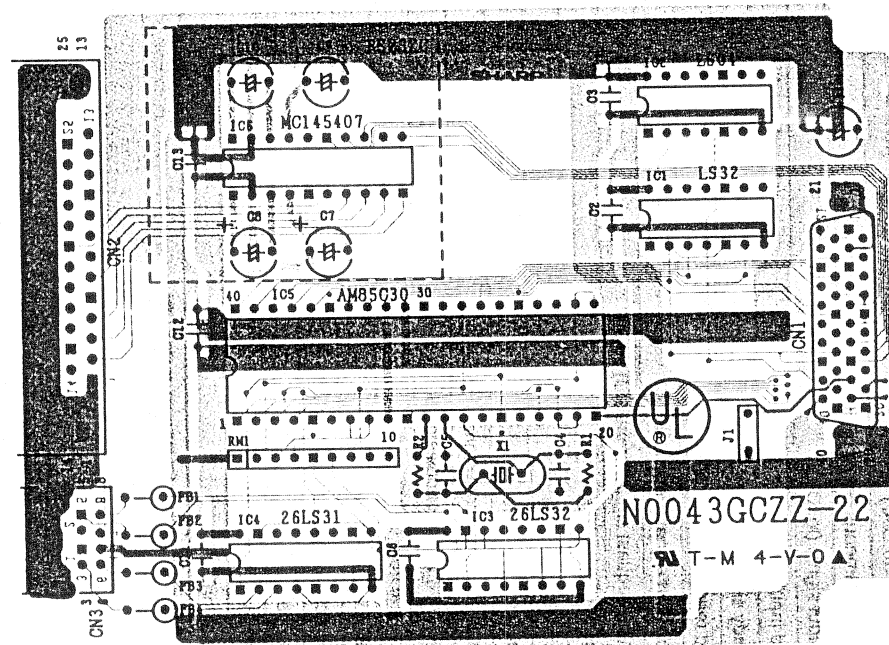
11-2. PARTS LAYOUT

12. APPLE TALK/RS232C I/F CIRCUIT
12-1. CIRCUIT DIAGRAM

EXON_
CODE0
CODE1
CODE2
CODE3

J1=OPEN:RS
J1=SHORT:RS/AP

GND

TXD
RXD
RTS_
DSR_
DTR_

RES_ ... NC

+5V
+5V
+5V
+5V

0.1uF C3
0.1uF C2
C1 22uF/16V

GND

GND
GND
GND
GND
GND
GND

IC6
11 DI3   TX3 10
12 DO3   RX3 9
13 DI2   TX2 8
14 DO2   RX2 7
15 DI1   TX1 6
16 DO1   RX1 5
17 VDD   VSS 4
18 C1-   C2- 3
19 VCC   GND 2
20 C1+   C2+ 1
MC145407

C9 10uF
+5V
C10 10uF

10uF C7
C8 10uF

C13 0.1uF
GND

RSCON
17LE-13250-28
1 FG
2 TXD_
3 RXD_
4 RTS_
5
6 DSR_
7 GND
8
9
10
11
12
13
14
15
16
17
18
19
20 DTR_
21
22
23
24
25
CN2

FG
GND

EXHREQ_
EXINTR_

D7
D6
D5
D4
D3
D2
D1
D0

R/W_

EXRDY_
EXIOCS_

A(2)
A(3)
SYSCLK

IC5
4 D7   INT_ 5
37 D6   TXDA 15
3 D5   RXDA 13
38 D4   TRXCA_ 14
2 D3   RTXCA_ 12
39 D2   SYNCA_ 11
1 D1   W/REQA_ 10
40 D0   DTR/REQA_ 16
         RTSA_ 17
8 INTACK CTSA_ 18
7 IE1   DCDA_ 19
6 IEO
36 RD_   TXDB 25
35 WR_   RXDB 27
         TRXCB_ 26
33 CE_   RTXCB_ 28
34 A/B_ SYNCB_ 29
32 D/C_ W/REQB_ 30
20 PCLK DTR/REQB_ 24
9 VCC   RTSB_ 23
31 GND   CTSB_ 22
85C30   DCDB_ 21

74LS04
IC2
74LS32
IC1
74LS32
IC1

C12 0.1uF
GND +5V

RAI-3 1K
RAI-5 1K

RAI-4 1K
1.5K R2

R1 1.0M
X1
C5 18pF C4 33pF
RAI-7 1K
RAI-2 1K
GND

IC4
1 A   A+ 2
9 B   A- 3
15 C   B+ 6
4 D   B- 5
        C+ 10
12 OE   C- 14
8 OE_   D+ 13
  GND   D-
  VCC 16
26LS31
C11 0.1uF
GND

IC3
3 A   A+ 2
5 B   A-
11 C   B+ 6
13 D   B-
        C+ 9
4 OE   C- 14
2 OE_   D+ 15
8 GND   D-
  VCC 16
26LS32
C6 0.1uF
GND

RAI-6 1K
1K
RAI-6

APCON8
CN3
1
2
3 TxD-
4 GND
5 RxD-
6 TxD+
7
8 RxD+

FB4
FB2
FB3
FB1

GND

12-2. PARTS LAYOUT

13. SIGNAL LIST (Printer section)

Signal name	Function
Xin	CPU Clock input
Xout	CPU Clock output
RES	CPU reset signal
NVCE	NVRAM chip enable signal
D3~0	LCD control data bus, key signal address, LED data bus, NARAM signal
CSWD	Cassette size, paper out datect signal
BUZZ	Buzzer signal
PRSTT	Print start signal
SYNC	Horizontal synchronous signal
LEND	Line end signal
DATA	Print data signal (from ICU)
VIDEO	Print data signal (to LSU)
HSYNC	Horizontal synchronous signal (to ICU)
STS	Status output signal (to ICU)
CMD	Command input signal (from ICU)
SRDY	Status ready signal (from ICU)
CRDY	Command ready signal (to ICU)
PAGE	Print action start signal (from ICU)
PRIM	PCU initialize request signal (from ICU)
READY	Print ready signal (to ICU)
LEN	LED control enable signal
RS	LCD control resistor selection signal
R/W	LCD control data read/ write signal, H:read
E	LCD control data synchronous signal
SWD	Key input signal from OPU
TSEN	Toner sensor input signal (analog)
RTH	Thermistor input signal (analog)
DOP	Cover open detect signal
Pout	Paper exit sensor signal
Pin	Pin sensor signal
PMD	Polygon motor drive signal, L:Polygon motor ON
PMTLK	Polygon motor lock signal
CO	Laser power control signal
VL2	Laser power control signal (analog)
VL1	Laser power control signal (analog)
Voff	Laser power off signal
PUSL	Lower paper feed solenoid control signal, L:PUSL ON
PUSU	Upper paper feed solenoid control signal, L:PUSU ON
PSC	Paper stopper clutch control signal, L:PSC ON
DRFC	Drum unit cartridge sensor cut signal, H:sensor cut
DRF	Drum unit cartridge sensor detect signal, H;New Drum
DVFC	DV unit cartridge sensor cut signal , H:sensor cut
DVF	DV unit cartridge sensor detect signal , H:New DV
HLSEN	Heater lamp control abnormal detect signal
HLON	Heater lamp control signal, L:Heater lamp ON
HLOFF	Heater lamp control signal, L:Heater lamp OFF
BiasON	Bias control signal, H:Bias ON

Signal name	Function
$\overline{\text{TCON}}$	Transfer corona control signal, L:Transfer corona ON
GBH	Grid bias control signal, H:Grid bias HIGH
$\overline{\text{MCON}}$	Main corona control signal, L:Main corona ON
TMDA	Toner motor drive signal
TMDB	Toner motor drive signal
TMA	Toner motor output
TMB	Toner motor output
MMDA	Main motor drive signal
$\overline{\text{MMDA}}$	Main motor drive signal
MMDB	Main motor drive signal
$\overline{\text{MMDB}}$	Main motor drive signal
COMA	Main motor output (common)
COMB	Main motor output (common)
MMA	Main motor output
$\overline{\text{MMA}}$	Main motor output
MMB	Main motor output
$\overline{\text{MMB}}$	Main motor output